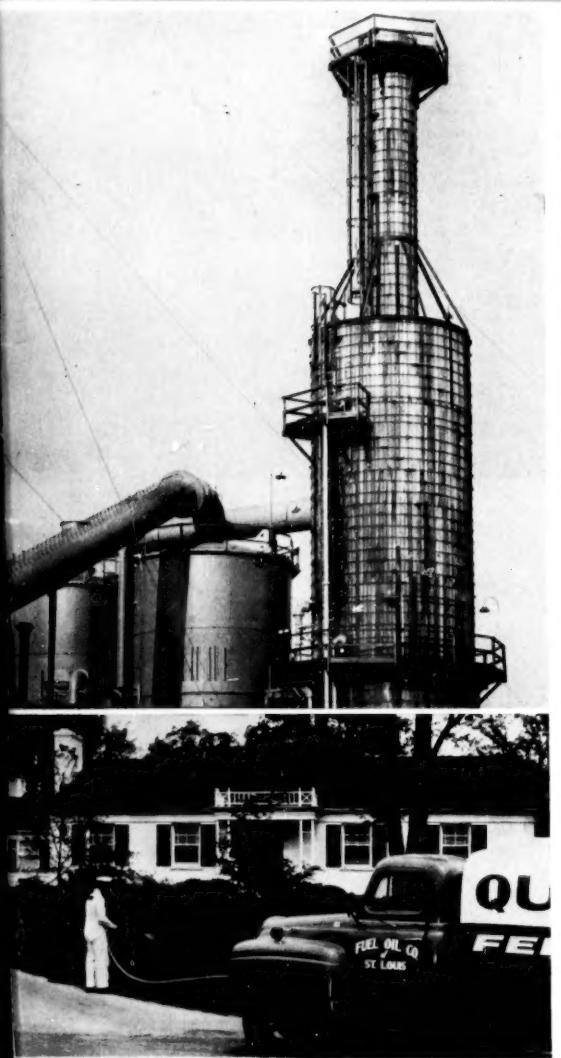


Chemical Week

July 10, 1954

Price 35 cents



► **Here's how Houston chemical firms**
win friends, influence the public
by assault on pollution . . . p. 20

It's a sign of the times: plant
men turn penny-pinchers to trim
costs, save money p. 36

Chemical purchasing agent tells
salesmen: Keep your sales pitch
in tune with customer's aims p. 44

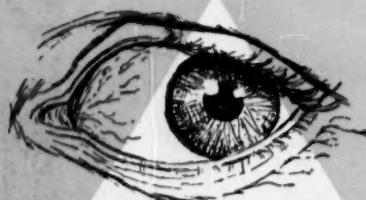
Corporate research gets the bigger
play, but trade associations are
doing their share p. 74

► **Now fuel oil jobbers are nosing**
into fertilizer business to
salvage summer season . . . p. 52

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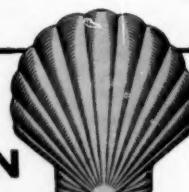
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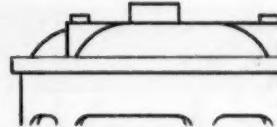
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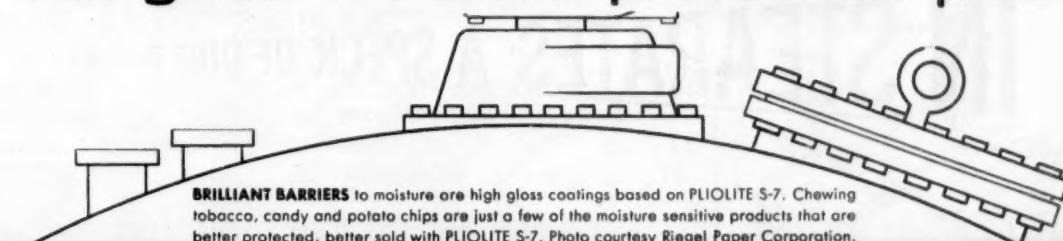
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Chemical Week

Volume 75

July 10, 1954

Number 2

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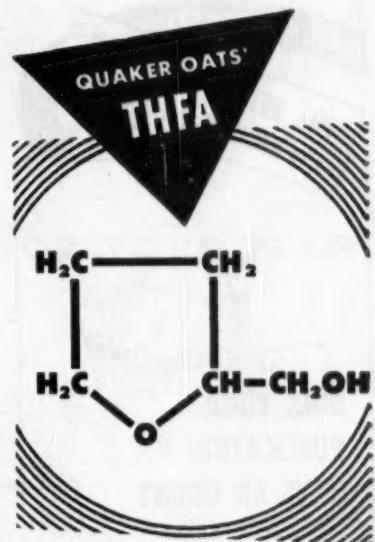
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July 10, 1954 • Chemical Week



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OPINION . . .

Dollar Fuel

TO THE EDITOR: In reference to your news article "Insoluble Problem" (June 19), where in the U.S. do chemists out of college make \$350 to \$375/month? It certainly isn't in the Boston area! I'm willing to start at \$375 and I've had 9 years of experience . . .

There has been a hue and cry about shortages of chemists but there is a definite resistance toward hiring women chemists especially those that are married. Also, they want experienced ones to start at a lower salary than new graduates. Is this an effective use of technical manpower?

There was praise in your previous report on New England about the spark of life still in staid old New England, but with these sentiments the spark will die without the proper fuel.

All of the criticisms I have heard about New England have been well-founded . . .

(MRS.) SYLVIA MARTIN
Lynn, Mass.

Plastic Autos

TO THE EDITOR: We have read your news article—"Ride to Plastics Markets"—(June 19) with considerable interest . . .

It is an accurate . . . story of our attempt at mass production of fiber-glass reinforced plastic automobile body parts.

I believe carefully written articles such as yours will be a help to the proper progress of the industry . . .

R. S. MORRISON,
President
Molded Fiber Glass Body Co.
Ashtabula, O.

Efficient Enzymes

TO THE EDITOR: Your "Target" "Pure Enzymes at a Price" (CW, June 19, p. 66) is a good example of one fruitful area in industrial enzyme development.

Frequently, it is possible to use cruder industrial enzyme preparations for specific jobs by adjusting conditions to enhance the activity of a particular desired enzyme system present in the product, while suppressing the action of other enzyme components that may be present in such crudes.

Eventually, with the help of biochemists, we can hope to reach the state when highly specific pure fractions can be produced on a commercial scale at reasonable cost. In addition to the advantage of selectivity, most enzyme reactions are much more

efficient thermodynamically, and generally easier to control than non-enzymic chemical treatment.

There is little doubt in my mind that the future will be bright for new developments in industrial enzymes . . .

DAVID R. SCHWARZ
Vice-President
Schwarz Laboratories, Inc.
Mount Vernon, N.Y.

Straw vs Synthetics

TO THE EDITOR: The brief item (CW, May 15, p. 76), which said that in a Nebraska test hydrolyzed sodium polyacrylate at two tons per acre was found to be inferior to straw mulch at two and a half tons per acre for stopping soil erosion, presumably was based on a paper presented at the American Society of Agronomy.

I think you will want to know that the results contained in that paper are not consistent with a great many tests conducted by academic workers and personnel of Monsanto. We have found that hydrolyzed polyacrylonitrile generally is effective in controlling erosion and promoting grass cover when properly applied at a rate of only 400 lbs. per acre. A closer look at the Nebraska test will, I think, help clear up the discrepancy.

First, it was conducted on a coarse-textured soil. Synthetic polyelectrolytes are most effective on soils with an appreciable clay content.

Second, the treatment was made when the soil was extremely dry and was immediately followed by a heavy rain. . . . In the Nebraska experiment the heavy downpour turned the over-treated soil into a gummy mass, and undoubtedly caused appreciable soil erosion before the resin was able to stabilize the soil.

All this is to say that perhaps the results of the test referred to ought not to be considered conclusive. Certainly, the results are at variance with those we obtained from extensive tests conducted in 23 states representing every geographical and climatic location in the country.

They have shown that, except

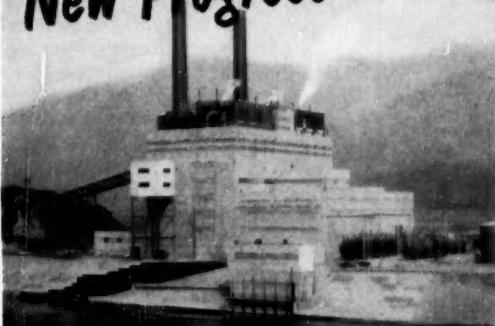
CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

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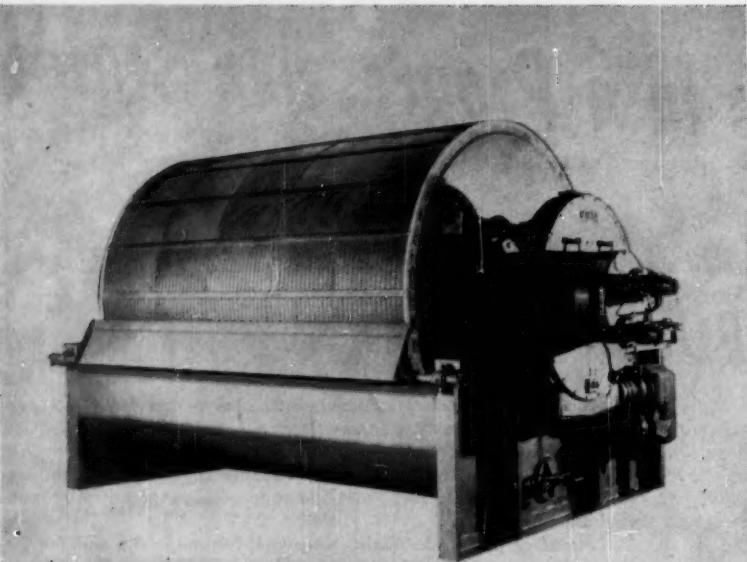
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Can Do Without

TO THE EDITOR: Re your news article "Permanents Discount Permanence" (June 26) I must strongly object . . .

It seems that the only reason I as a consumer should drain the permanent antifreeze out of my car is to increase sales for the big glycol companies.

If this is the case, I would rather deal with one of the 22% of service station attendants who do not push unwanted expense on me, than with one who tries to sell me, on grounds of larger sales wanted by giant companies. Such re-education I can do without . . .

RICHARD GREEN
Research Chemist
H. D. Justi & Son, Inc.
Philadelphia

DATES AHEAD

Plant Maintenance Show, Pan Pacific Auditorium, Los Angeles, July 13-15.

American Pharmaceutical Assn., annual meeting, Statler hotel, Boston, Aug. 22-27.

World Congress on Surface Active Agents, Sorbonne, Paris, France, Aug. 30-Sept. 3.

International Congress of Industrial Chemistry, Brussels, Belgium, Sept. 11-19.

American Chemical Society, national meeting, Statler hotel, New York, Sept. 12-17.

Federal Wholesale Druggists' Assn., annual convention, Greenbrier hotel, White Sulphur Springs, W.Va., Sept. 19-22.

Chemical Market Research Assn., fall resort meeting, Equinox House, Manchester, Vt., Sept. 20-21.

Drug Chemical and Allied Trades Section, N.Y. Board of Trade, annual meeting, Pocono Manor Inn, Pocono Manor, Pa., Sept. 23-25.

American Oil Chemists' Society, fall meeting, Radisson hotel, Minneapolis, Minn., Oct. 11-13.

National Chemical Exposition, Chicago Coliseum, Chicago, Oct. 12-15.

National Safety Congress and Exposition, chemical section, Chicago, Oct. 18-21.

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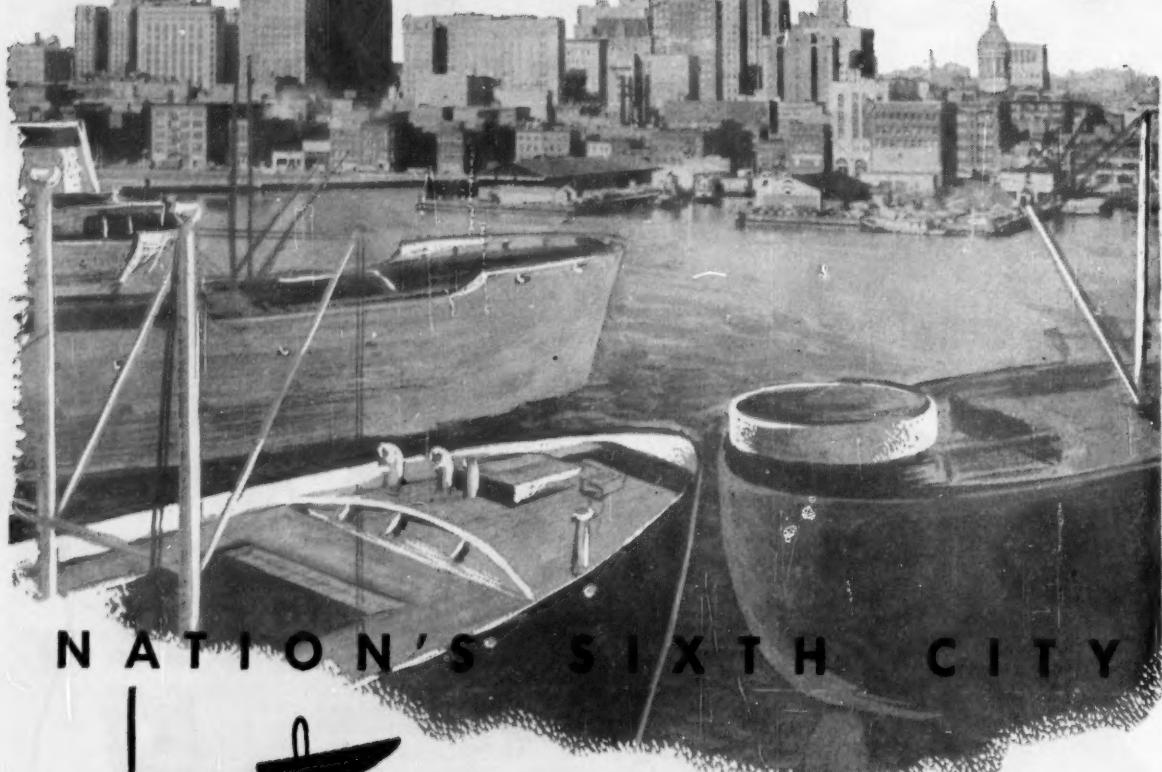
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Chemical Week • July 10, 1954

NEWSLETTER

Plans for a multimillion-dollar, privately financed butadiene operation in Texas are nearing completion. By late last week, there was still no official word on a decision. But principals in the project—officials of Warren Petroleum, Fluor Corp. and financial backers—had already met, were hard at work sifting last-minute details.

It figures to be a 40,000-ton/year, \$26-million plant. It will be engineered and built by Fluor for Warren. Not clear as yet, however, is whether Warren or one of its subsidiaries will operate it alone or in co-operation with someone else. Money for the project is coming from bankers headquartered in New York.

If the plans go through, the plant will not only be the first one financed by private capital, it will also be the first one to employ a new process that bypasses the intermediate butylene, makes the butadiene directly from butane. The backers, moreover, are reportedly willing to settle for a lower-than-normal profit margin. That, plus a 5-year payoff and the short-cut process, would enable them to sell butadiene for 14¢/lb.— $2\frac{1}{2}$ –3¢/lb. below the price present facilities are getting.

Site possibilities have not been mentioned, but spots along the Neches River have been given serious consideration. And the labor market in that area has been surveyed.

A bigger, bulkier CIO labor union for chemical companies to bargain with is in the offing this week. As was foreseen when Walter Reuther won out over Allen Haywood for the CIO presidency (CW, Dec. 13, '52, p. 15), the two CIO unions whose jurisdictions overlap in the petrochemical field are now exploring the possibility of a merger. They're the United Gas, Coke & Chemical Workers and the Oil Workers International Union.

Officers of the former are right now sounding out rank-and-file members on their reaction to a merger. And in a preliminary get-together at Cleveland, Gas-Coke and OWIU officers agreed on a general policy for combining the personnel staffs of the two unions. More detailed conversations were held in Denver last week.

The two unions have a combined membership of close to 200,000. If various independent oil unions decide to join the party, the end product might well be an organization with a membership near the quarter-million mark.

Another project having bright prospects is the \$12-14-million potash plant proposed by National Farmers Union for Carlsbad, N. M. Exploratory drilling completed, the organization now reports the potash body has been "thoroughly defined." Drilling is being continued for the remainder of the summer to determine likely mine sites. Says Business Manager C. E. Huff: "The proposed potash plant will definitely become a reality."

The same association's plans for a triple superphosphate plant, on the other hand, are not crystallized. It's thinking of putting up a \$6-million plant in Canon City, Colo. Huff, however, says other sites are

NEWSLETTER

under consideration. And National Farmers Union will not commit itself one way or the other for several months.

The Bureau of Mines and Alabama Power Co. have signed a contract that will mean the reopening of underground coal gasification experiments at Gorgas (Ala.). Stanolind is associated with the utility in the contract.

First tests are expected to get under way next fall. Specifically, they'll try hydraulic fracturing of underground coal beds (see p. 40) instead of the electro-linking process used in the most recent runs there.

The two industrial concerns are putting up about two-thirds of funds required; the bureau will ante up the rest. Money for this purpose can be allotted from funds voted it by Congress last week.

Negotiations between the General Services Administration and Cleveland's Horizons Titanium Corp. came to an end and the two signed a contract calling for the construction of a \$564,000 pilot plant.

The plant will put the Horizons' electrolytic titanium process to the test. Tentative plant site: Stamford, Conn. Horizons will operate the plant for a year and, if the process proves out, it will pay the GSA investment back through future metal sales to the government.

And while the government is teaming up with industry on two projects, it's giving serious thought to pulling out of areas where it may compete head-on with private concerns. Top-level officials of the Defense Dept. this week are querying subordinates with a view toward getting out of such activities. (See also, Muscle Shoals, p. 13.)

Various defense installations have been asked to report within 45 days, the location and operating details on acetylene generating facilities as well as on units for making oxygen, nitrogen and argon.

The installations are also to report—by June 29, '55—why such facilities should be government-operated. If sufficient justification can't be made, the plants will be leased or sold to private industry.

The road to progress is not a one-way street, however, and the chemical process industries received two setbacks last week:

- Chevrolet notified Molded Fiber Glass Body Co. and Lunn Laminates to suspend production of Corvette plastic bodies. No reason was given for the suspension order.

- Monsanto, only recently embroiled in labor trouble at its Texas City plant (CW, July 3, p. 23), had to shut down phenol production at its Avon (Calif.) plant. Ironically enough, the company was forced into the move by the Pacific Northwest lumber strike, which is affecting Monsanto's customers.

Monsanto operates one of the two phenol plants on the West Coast.

The other is owned by Standard of Calif., which says the strike has had a "disastrous effect" on plywood adhesives, which normally take 60-65% of its Richmond output. However, it adds that it's been able to weather the storm so far because of increased sales to the plastics industry, the other big customer for the West Coast phenol. The increased sales have made up for most of the loss and Standard hasn't as yet curtailed production.

. . . The Editors

HOW HERCULES HELPS...

Most businesses are helped today by Hercules' business . . . the production of synthetic resins, cellulose products, chemical cotton, terpene chemicals, rosin and rosin derivatives, chlorinated products, and many other chemical processing materials—as well as explosives. Through close cooperative research with its customers, Hercules has helped improve the processing or performance of many industrial and consumer products. We welcome the opportunity to work with you.



...TO PACKAGE MILK



...TO DEFEND OUR NATION

Hercules' pioneering work in rocket research now enables guided missiles such as NIKE to get off the ground and quickly reach supersonic speed. This is done by means of a booster unit using a charge of solid propellant as the source of energy. This contribution to national defense stems logically from the manufacturing and technological know-how gained through many years of experience in industrial explosives.



...TO INCREASE CROP YIELDS

Milk cartons represent one group of packages which Pexol® fortified size helps make leakproof during the paper-making process. Other Hercules chemical materials such as Kymene® wet-strength resin and Paracol® wax-resin emulsion are helping paper makers produce better end products.

Toxaphene insecticides control boll weevils, armyworms, and more than 170 species of insect pests that threaten the livelihood of farmers. A low-cost, extremely effective ingredient for agricultural dusts and sprays, toxaphene is the result of continuing research conducted by Hercules to solve farm problems.



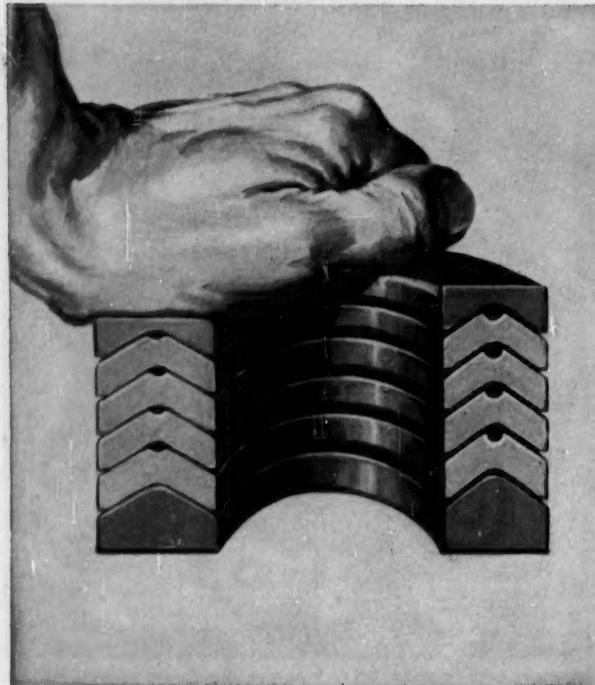
HERCULES POWDER COMPANY 992 Market St., Wilmington 99, Del.

INCORPORATED

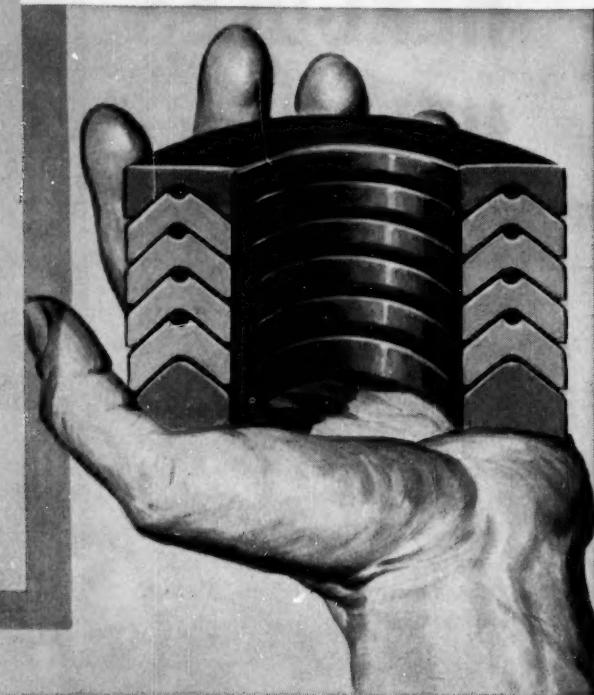
Sales Offices in Principal Cities

HERCULES

See for yourself how U. S. Matchless Packing reduces wear on rods, reduces packing costs



This demonstration set of U.S. Matchless has been cut in half. When set is squeezed by hand, note how the lips spread out. Then note what happens when the pressure is released...



When pressure is released, the lips retract. This action duplicates what happens when U.S. Matchless is subjected to hydraulic pressure plus subsequent release, as on a reciprocating rod or hydraulic ram.

The photos above show how pressure (whether gas or fluid) forces the double pliant lips of U.S. Matchless® Packing against the rod and side of the stuffing box. *This self-adjusting, automatic action plus the blunt edge design reduces wear on the rods, prolongs packing life and hence lowers maintenance costs.*

U. S. Matchless is recommended as original equipment by some of the largest makers of hydraulic presses and makers of rotary oil drilling

rigs. It is ideal for rams, accumulators, triplex pumps and oil well swivels. It is designed to handle hot and cold water, brine and ammonia, hot and cold oils, crudes, gasoline and all petroleum products, and is a favorite of manufacturers of liquid or gaseous materials.

U. S. Matchless Packings are obtainable through any of our selected distributors or any of our twenty-seven District Sales Offices, or by writing the address below.

"U. S." Research perfects it.

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U. S. Industry depends on it.



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BUSINESS & INDUSTRY . . .



CHICAGO'S SNYDER, PETERS, NEWTON: On additives, two schools of thought.

One for the Lawyers

What the Washington scoreboard shows this week about food and drug legislation: one bill (of minor significance to the chemical industry) enacted into law; one bill (on pesticide residue tolerances) now standing a good chance of passage; at least eight bills (such as one banning artificial colors for citrus fruit) that can be written off as dead; and one new bill that has suddenly become a torrid topic for lawyers of food, drug and chemical companies.

This latest entry in the food-and-drug arena is H.R. 9166, introduced by Rep. Joseph O'Hara (R., Minn.); and the reason it has become the center of the additive regulation controversy is that many attorneys in this field regard the bill as posing the most fundamental re-examination of basic principles since passage of the Pure Food & Drug Act in 1938.

Indicative of the interest in this measure is the panel discussion to be held Aug. 17 in Chicago as part of the annual meeting of the American Bar Assn. ABA's Food, Drug & Cosmetic Law section has arranged for a panel that will include Swift's Roy Newton, an author of the bill; and two opponents of the bill, Quaker Oats' Vice-President (chemical research) Fredus Peters, Jr., and senior member Erwin Snyder of the law firm that represents Kraft Foods.

Under the O'Hara bill, the manufacturer or user of a new chemical additive would have to apply in advance for a ruling on his product's accepta-

bility. One point that upsets some company lawyers: the Secretary of Health, Education & Welfare would be required to consider "the functional value of the proposed additive" as well as whether it's safe.

The only food and drug bill actually signed into law so far during the present session of Congress is the Hale amendment on food standards, which merely simplifies the procedure for setting noncontested food standards. The bill that now seems likely to be passed during this last hectic month before adjournment is the Miller pesticide bill. Only item in this bill that might hold up enactment until next year is the question of whether the Food & Drug Administration should be allowed to charge fees for setting tolerance limits for commercial pesticide products.

Home Stretch Drive

The Army is going into what it hopes is the home stretch in getting out of the chlorine-caustic business at Muscle Shoals, Ala.

Signalling the drive: the start of negotiations with the three firms that submitted proposals to lease or purchase the 220-ton/day facility.

Complicating the negotiations, however, is a requirement demanded by the Army, that it, by giving 30-day written notice, can obtain any or all of the plant's production of chlorine or caustic soda for use in the interconnected phosphate development works. (This facility is operated for

the Army by the Tennessee Valley Authority.)

But, indicating that the break may come soon, representatives of the Army Corps of Engineers, the Chemical Corps and Diamond Alkali met at Muscle Shoals late last week to discuss the problem, were trying to see whether differences could be reconciled.

If such an agreement can't be reached with Diamond, then the Army says it will negotiate with Columbia-Southern (which it considered had sent in second-best proposal); and, if still no contract can be agreed upon, then it will talk over the situation with Allied Chemical's Solvay Div.

The proposals, made by the three companies, however, were made on such varying terms that the Army feels it will have to negotiate for any agreement regardless of 30-day written notice requirement.

- Diamond Alkali offers to purchase the plant for \$15,127,000. It proposes, however, that the Army give a greater than 30-day notice before it could pre-empt the plant's production.

- Columbia-Southern Chemical has submitted three proposals. Most attractive: the company offers to lease, paying \$6/ton for chlorine and a similar amount for each ton of caustic the plant produces. The Army would pay Columbia-Southern the f.o.b. market price for the material it actually uses. Guaranteed rental payment would be \$300,000/year for the first two years, \$700,000 for each of the next three, and \$1 million for each of the next 15. Any rentals would be applied against possible purchase of the plant at a \$17.5 million figure.

- Solvay offers to lease the plant for 10 years, with two 10-year options for further lease. It will pay \$12.10/ton for chlorine and \$4.30/ton for caustic used by the Army; \$8.10 and \$2.30, respectively, for production sold elsewhere. The Army, again, would pay market price for material use. Guaranteed rental to the Army would be \$4.3 million for the first 10-year period. Solvay also offers to purchase the plant for \$7.5 million.

Assuming that the Army can negotiate a satisfactory deal with one of the three companies, it will then have only one more hurdle to jump before agreement can be reached. Senate Armed Services Committee approval to any agreement will be required.



MANAGEMENT DIVIDES: To CIL 54, Greville Smith, president; L. Hynes and W. T. D. Ross, vice-pres.; E. L. Hamilton, sec.; D. W. Shales, treas.; to Du Pont of Canada, H. H. Lank, president; R. G. Beck, vice-pres.; F. S. Capon, sec. and treas.

Parting: By Decree, but Deftly

*"Tis hard to part when friends
are dear,—*

*Perhaps 'twill cause a sigh, a tear; . . .
Say not good night, but in some
brighter clime
Bid me good morning."*

In such a spirit, Canadian Industries Ltd.'s long heralded disassociation went into effect last week. The consensus: that although at the onset, most company executives had disagreed with the court order demanding segregation of Imperial Chemical Industries Ltd. and Du Pont interests, the ultimate severance was handled with masterful tact and deftness—on the part of all concerned.

Actual parcelling out of physical

assets, property and material possessions was a long and tedious affair. But it wasn't the trickiest part of the operation.

"Rather," says one company official, "we found that the alignment of personnel, so that every man would feel that he had been fairly treated and had been given the opportunity of choosing his own path, demanded the greatest attention." Management was convinced in its own mind that it owed it to its employees; human beings, unlike properties, couldn't be coldly sorted out on a counting board. Their wishes in the matter—their opinions as to where they would fit in best—had to be considered and taken into account as the single most

important factor in the deciding just where they would be placed.

Then when a decision had been reached, the whole shift had to be managed smoothly, without disrupting business—a move that physically involved over a thousand people.

Needless to say the task must have appeared formidably discouraging—particularly at top management levels where a majority of the most radical changes would inevitably take place. On a strictly departmental level, it was easier and involved far fewer dislocation of personal ties. For example, under terms of the agreement, Canadian Industries (1954) Ltd. obtained all assets pertaining to agricultural chemicals, paints and coated

fabrics, explosives and ammunition. Operating personnel quite naturally tended to prefer to go along with their long-time sales representatives and head-office contacts. The change-over involved very little personal upheaval; chain of command was held virtually intact.

Management Opportunities: But at a staff level, it was more perplexing. Separation of accounting teams, advertising departments, engineering, legal, public relations, purchasing and traffic staffs was a delicate matter. "Thanks to an understanding top management," states one new CIL '54 staffer, "we were encouraged to work the problem out—pretty much by ourselves. Some of the fellows had close bonds in Wilmington, felt that they'd be happier with the new Du Pont of Canada, Ltd. Others of us leaned toward CIL '54. Nobody was forced into a decision one way or the other; none of us felt we were being railroaded into taking a course by direct order. That made all the difference in the world . . . made us feel that although nobody liked it . . . our interests were a prime consideration to the company."

Adding to the brighter side of the picture: forming two companies from one necessarily opened up a host of new executive positions; for many CIL executives, it meant a quick step up the management ladder. Example: one vice-president became a president, two department managers took over the reins as vice-presidents; numerous appointments of service department managers were made.

Doughnut or Crumpet?: Characteristic of the finesse with which the transfer was handled, was the timing of appointments. First came the assignment of department managers—each with his own consent and approval. Next, the release of the name of the new department head—of the other company—most usually his second in command.

When everyone had become advised of the new lineup, staff "selections" were made—with the consent and approval of both new chiefs. If the pair—bearing in mind their respective needs—couldn't come into accord, a board of arbitration was made available (consisting of two vice-presidents—Robert Beck and Leonard Hynes) to settle the issue. Identical procedure governed selection of personnel everywhere—both in Montreal and in all district offices.

That personnel was well aware of what the company was trying to do—and was in sympathy with the plan—is evidenced by the bantering

question so often heard in elevators and corridors—"Doughnut or crumpet?" Uncertainty was implied—but "confident uncertainty." Nobody really questioned that his welfare was being dealt with casually; no one seriously questioned that if he made known that he harbored a preference one way or the other, it would not go unheeded.

How well the tactful approach worked is silently underscored by company records. Of the 6,000 employees assigned to CIL '54 and 3,000 commissioned to Du Pont of Canada, no person refused to take his new job or left because of dissatisfaction with it.

That's a creditable achievement—realized in the face of a very delicate and "unwanted" situation.

Hitting High Spots

Scrutiny of the relatively higher U.S. customs rates will be the next stage of this nation's current controversy over tariff policy; and this will steer the public gaze onto certain duty rates designed to give most protection to domestic chemical companies.

Beginning next Tuesday, the U.S. Tariff Commission will hold public

hearings in a study of tariff rates equivalent to 50% or more of the value of the product. This investigation—which was requested by the Senate Finance Committee—is aimed at finding the answers to these two questions:

- What tariffs over 50% ad valorem could be cut, and how much, without injuring or threatening to injure a U.S. domestic industry?

- What tariffs in this category should be raised, and how much, to avoid injury or threat of injury to a domestic industry?

Results of this investigation—to be reported to the committee before the end of the year—will provide ammunition for and against the Administration's proposed three-year tariff bill, which would give the President authority to cut any tariff down to a 50% ad valorem ceiling. That bill was shunted aside in the current session of Congress, but it's expected to be reintroduced next year, no matter which party has control in the two houses; and the 50% clause will be one of the most warmly debated sections.

The chemical industry's interest in the investigation is twofold, direct and indirect. Of immediate concern to many domestic manufacturers will be the commission's recommendations about tariff rates on the chemical and

WHERE TARIFF CUTS MIGHT COME

(Chemical products on which ad valorem tariff duty is 50% or higher)

	Pretrade-agreements rate	Present rate	Value of '53 imports	Present ad valorem equivalent
Stearic acid	25% +3¢/lb.	12½% +3¢/lb.	(1)	(n.a.)
Chloroform	4¢/lb.	4¢/lb.	(2)	51.7%
Brewers' yeast	20¢/lb. +25%	20¢/lb. +12½%	(2)	56.0%
Extracts for dyeing, coloring, staining	40¢/lb. +25%	40¢/lb. +12½%	(2)	108.5%
Medicinal preparations	80¢/lb. +25%	80¢/lb. +12½%	\$3,000	77.7%
Ethers and esters	40¢/lb. +25%	40¢/lb. +25%	(2)	72.7%
Flavoring extracts, oils and essences	40¢/lb. +25%	30¢/lb. + 9 %	13,000	79.33%
Chemical elements and compounds not specifically provided for	20¢/lb. +25%	20¢/lb. +25 %	1,000	71.8%
Diethylbarbituric acid	\$2.50/lb.	\$2.50/lb.	(2)	250.0%
Alizarin, indigo, other color compounds	7¢/lb. +45%	7¢/lb. +45 %	16,000	53.1%
Photographic chemicals (coal tar)	7¢/lb. +45%	7¢/lb. +45 %	41,000	50.7%
Synthetic tanning materials (coal tar)	7¢/lb. +45%	7¢/lb. +45 %	17,000	59.5%
Cellulose acetate waste	50¢/lb.	12½¢/lb.	(2)	52.9%
Linseed oil	4½¢/lb.	4½¢/lb. +50 %	1,000	55.3%
Artists' paints, etc.	¾¢/unit	¾¢/unit	(2)	69.1%
Sodium nitrite	4½¢/lb.	4½¢/lb.	3,000	58.1%

(1) Negligible; (2) less than \$500.

BUSINESS & INDUSTRY

pharmaceutical products listed in the table on p. 15, and on certain end-products from chemical materials, such as synthetic textiles. While 1953 imports of these items were not large, it can be argued that only the higher tariff rates have been keeping foreign imports from flooding the U.S. market.

The other way in which the probe will be of importance to the chemical process industries will be its general effect on the thinking of people in and out of government. The commission's findings are expected to weigh heavily in Congressional deliberations next winter; so industries depending on tariff protection have good reason to be heard from in the forthcoming hearings.

EXPANSION . . .

Rubber Accelerators: American Cyanamid Co. has started production at its new rubber accelerator plant at Bound Brook, N.J., which will more than double the company's previous output.

Freon: Du Pont Co. will build a monochlorodifluoromethane plant at Louisville, Ky., with completion scheduled for early fall, 1955. The new facilities will represent the third major expansion by Du Pont of refrigerant-propellant capacity this year. Expansion at Deepwater, N.J., and East Chicago, Ind., has already been completed.

Cellophane: Du Pont Co. is also contemplating a \$2-million expansion project at Old Hickory, Tenn., to start sometime this fall. Company executives hope to increase present capacity of cellophane facilities some 20%.

Sponge Titanium: Electro Metallurgical Co. will build a \$30-million sponge titanium plant at Ashtabula, O., with a capacity of 10,000 tons/year. Governmental aid in the project will probably include an agreement to purchase at least half the plant's output over the next 4-5 years—besides a cash advance and a quick tax write-off.

The new plant's expected to be built on a 100-acre tract of land adjoining the new plant of Linde Air Products—also a subsidiary of Union Carbide.

Ammonia: Hercules Powder Co. has started production of anhydrous ammonia at its Missouri Ammonia Works, Louisiana, Mo. One ammonia line is already in operation, and the remaining two lines will be brought in within the next several weeks. Presently under consideration: production of a

series of other chemicals—all economically feasible under the present setup. Included: methanol, formaldehyde, pentaerythritol (*CW Newsletter*, July 3).

Tetrafluoroethylene: Expansion of facilities (by 100%) to manufacture tetrafluoroethylene is being projected by Du Pont Co. New units will be built (starting this summer) at Parkersburg, W. Va.—site of the initial Du Pont production of Teflon in 1950.

COMPANIES . . .

The Bersworth Chemical Co., Framingham, Mass., has changed its corporate name to Versenes, Inc. No other change in either structural setup or personnel is contemplated at present.

Fourteen building permits, totaling over \$15.8 million, have been taken out by the Grace Chemical Co. for its \$20-million ammonia plant under construction outside Memphis, Tenn. Completion is scheduled for this fall.

Texas International Sulphur Co.

wants to sell 455,000 shares of its 10¢ par common stock "as a speculation," says it will apply proceeds mainly toward the cost of its exploration program (mostly test drilling) in the Isthmus of Tehuantepec, Mexico. In a registration submitted to the Securities & Exchange Commission, the Houston concern says it will offer 385,000 shares to stockholders on a 1-for-4½ basis first, then offer any unsubscribed shares plus 70,000 additional shares (to be offered by selling stockholders) to the public on a "best efforts" basis.

United Dye & Chemical Corp. has extended its preferred stock voluntary exchange offer until Oct. 29. Under terms of the offering, holders of the company's 7% cumulative preferred stock may exchange it on the basis of one share of preferred for ½ share of common and a \$100 debenture—the latter carrying a 6% coupon.

Stockholders of Olin Industries, Inc. and Mathieson Chemical Corp. have voted approval of their companies' plans for merger, but no date has yet been set for official junction.



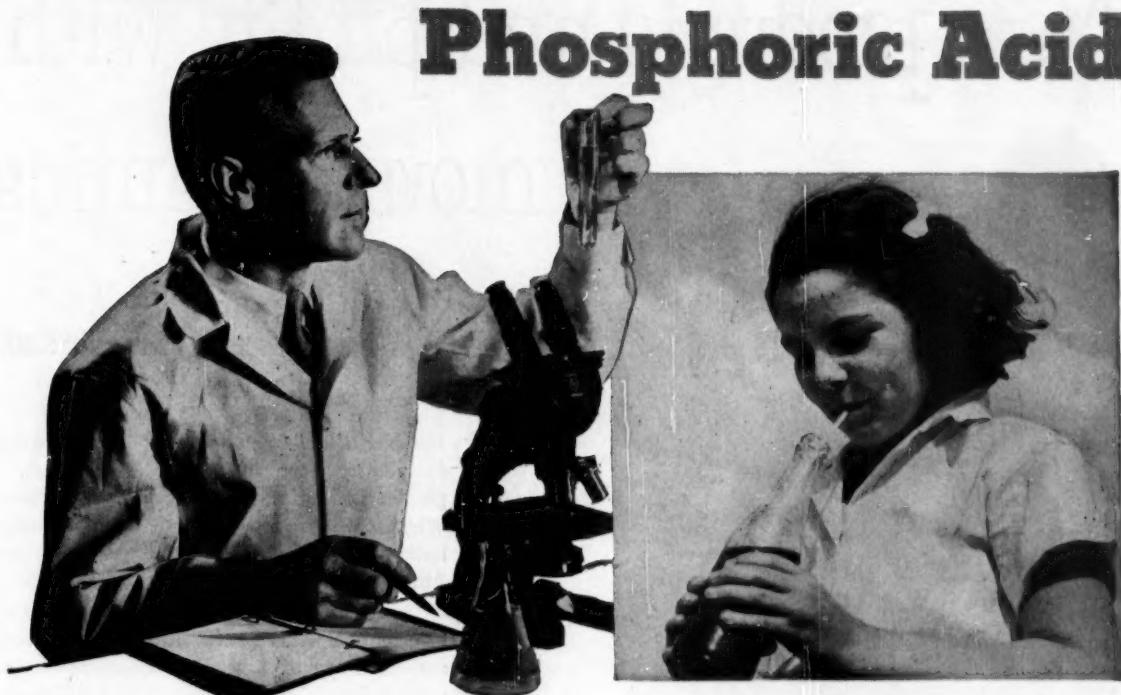
WIDE WORLD

On a Technical Tour

NUMEROUS chemical plants at which significant advances have been made in control of air and water pollution are being visited this month by these 11 engineers and scientists from seven European countries, whose U.S. tour has been

arranged by the Foreign Operations Administration's Organization for European Economic Cooperation. The journey began with this inspection of testing equipment at the laboratory of the New York City Dept. of Air Pollution Control.

AA QUALITY Phosphoric Acid



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uses, AA QUALITY Phosphoric Acid, in its various grades, amply and consistently meets national formulary and pure food specifications. Made from 99.9% pure Elemental Phosphorus, produced by electro-thermal process in two modern A.A.C. Co. plants, using phosphate rock from our own mines. *Utmost purity assured by rigid control from mines to finished product . . . dependable service assured by large-scale production and ample phosphate rock reserves.* Good reasons for using AA QUALITY Chemicals.

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85% N. F. Grade • 75% Pure Food Grade
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Phosphorus Red (Amorphous)
Phosphorous Pentasulphide • Sesquisulphide
Ferro Phosphorus (Iron Phosphide)

PHOSPHATES

Disodium Phosphate • Trisodium Phosphate
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PHOSPHATE ROCK AND FERTILIZERS

All grades Florida Pebble Phosphate Rock
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Sodium Fluoride • Ammonium Fluosilicate
Magnesium Fluosilicate • Potassium Fluosilicate
Sodium Fluosilicate • Zinc Fluosilicate
Fluosilicate Mixture • Ammonium Fluoborate
Aluminum Fluoride • Magnesium Fluoride

GELATIN

KEYSTONE® Gelatin: Edible, Photographic
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OTHER PRODUCTS

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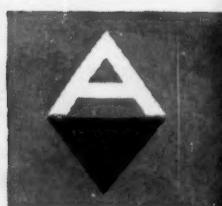
New Armour chemicals kill static in synthetic fibers!

Dynel! Acrilan! Orlon! Dacron! These wonderful new fibers mean new fabrics for the consumer, but new problems of static electricity for the textile manufacturer. Which chemical is the most *effective* in eliminating static build-up? Which is the most *economical* in your case? Armour chemists set out to find the answers.

They screened over one hundred Armour chemicals to determine their relative effectiveness and economy as anti-static agents. Research evaluations of these compounds for anti-static properties on synthetic fibers disclosed an interesting fact.

Armour chemists found that *no one* chemical is completely effective on all fibers. For example, economical concentrations of ARQUAD® 16 proved excellent on Orlon, Dacron and Dynel. But ETHOMEEN® T/12 proved more effective on Acetate. And ARQUAD 18 proved excellent on wool synthetic blends. What does this prove?

Every static electricity problem is different. New Armour chemicals are effective on all fibers, but different combinations must be tried and evaluated to determine which is the most effective and most practical anti-static agent. To help you in your evaluation, Technical Bulletin G-2, offered in the coupon, suggests particular chemicals to be tried for each individual case. By using Armour chemicals this way you can eliminate static electricity in all your fibers. Put this discovery to work for you today!





Neo-Fat® 10 keeps shower curtains colorful!

Nobody wants to pay for a nice new plastic shower curtain that will change color when it's exposed to heat or light. But manufacturers of vinyl chloride polymers have this problem due to the presence of unsaturated fatty acids in their vinyl stabilizers.

To combat this discoloration, the Armour Chemical Division tested Neo-Fat 10, a high purity coconut oil fatty acid having a capric content of 92%. The results show that metallic soaps made from Neo-Fat 10 have the desired compatibility

with vinyl films and do not contribute to cloudiness, bloom or yellowing in the finished products. The main reason for this is the almost complete absence of unsaturated acids.

The high acid value, low moisture and low unsaponifiable content of Neo-Fat 10 insure a maximum of metallic soap per pound of fatty acid. Send for the booklet and free samples of Neo-Fat 10—another example of new profits with Armour Chemicals!

Cosmetics, candles and hundreds of other products depend on Armour stearic acid stability!

Cosmetics, candles, emulsifying soaps, buffing compounds, finishing agents, metallic stearates—in all products using stearic acid, stability is vital. Armour now offers three types of superior stearic acid—single, double, and triple pressed—which remain stable through storage, processing and finished product!

These Neo-Fats are manufactured by an exclusive Armour process



which insures maximum stability—in fact, heat stability and peroxide tests show that they retain color and resist rancidity even during high temperature processing.

Send the coupon for samples of Armour Neo-Fat 18-53 (single-pressed) 18-54 (double) and 18-55 (triple). Your own tests will convince you of their stability, efficiency and economy!

ARMOUR CHEMICAL DIVISION



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Powdered Armowax finds new applications!

Armowax, a synthetic wax having a high-melting point is now offered in powdered form. Using a small amount of wetting agent it can be dispersed in water. The stable dispersion thus formed can be reduced with additional water. Wax content as high as 33% can now be made with a minimum of effort and equipment.

Suggested Emulsion

Armowax (powdered)	33
Armac® T	7
Water	60

The Armowax along with a proper emulsifier and tap water is charged into a pebble or flint ball mill. The mill must be entirely filled to avoid occlusion of air. The presence of air will prevent formation of the desired liquid/solid dispersion. After grinding 16 hours the dispersion is complete and ready for use.

Applications

Armowax can be used as a binder for ceramic powders to be molded prior to firing. It imparts green-strength and also facilitates mold release.

Armowax can also be used as a paper and textile coating where water-repellence and a light-colored wax film are desirable.

Armowax is useful in any application requiring a high-melting (132°C—275°F) wax, that possesses good initial color and heat-color stability. Send for samples and information.

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 Neo-Fat 18-53 Sample
 Neo-Fat 18-54 Sample
 Neo-Fat 18-55 Sample
 Neo-Fat 18-54 Booklet

- Derivatives: Powdered Armowax Sample
 Tech. Bull. G-2 (Anti-Static)

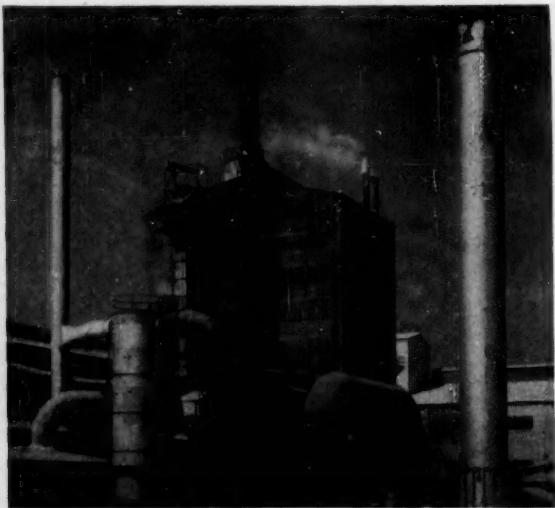
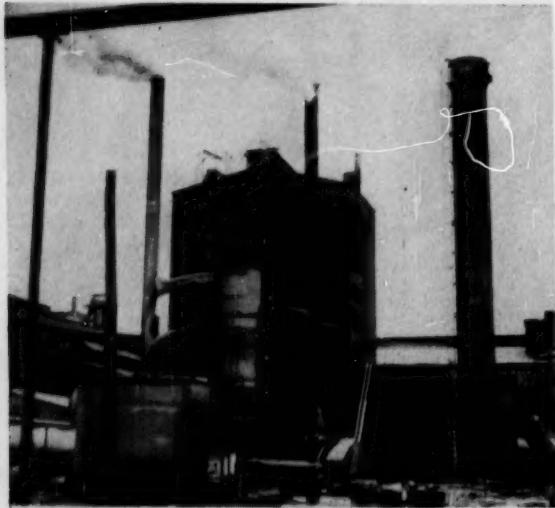
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Firm.....

Address.....

City..... Zone..... State..... W



BEFORE AND AFTER: Via sharply reduced pollution—as at Mathieson fertilizer plant, above—chemical firms in Texas . . .

Gain Praise, Cut Waste

Tumultuous times among the Texans who live near the many chemical and petrochemical plants east of Houston have given way to a placid era in which private pollution and public ire are both steadily dwindling away. And this week, city and state officials—who less than two years ago were uncomfortably “in the middle” as citizens stormed against the area's sky and stream pollution (*CW, Oct. 4, '52, p. 19*)—are publicly praising the chemical companies for their cooperative policies and their technical achievements in pollution control.

For chemical management in Houston and vicinity, the past two years have brought two big accomplishments in the realm of pollution:

- Developing processes and utilizing equipment that greatly reduce the amount of air and water pollution.
- Convincing the public that the companies really want to be good neighbors.

Success on both counts has helped the firms in many ways. In some cases, pollution abatement means capture and profitable utilization of worthwhile products that formerly went to waste; in a few instances, companies have eliminated the threat of closure by court order; and in all cases, community relations have improved vastly and chemical companies have escaped the special state tax that earlier this year had been planned for imposition on this particular industry. It's safe to say that solid progress in pollution abatement helped to keep sentiment for that bill

from building up in the Legislature.

Cooperation, Compliance: One tribute to the chemical firms in southeast Harris County comes from L. D. Farragut, director of the county health unit. His latest report hails the progress made in pollution abatement, hints that the end's in sight for odors and fumes that insult the nose, assault paint and shrubs.

During the three months covered by that report, Farragut says, conferences were held at 26 plants thought to have been causing some of the pollution. At all but one, “management displayed cooperation and willingness to take care of their individual problems.”

Of the eight air pollution abatement orders issued during the quarter, seven were complied with immediately. At the eighth plant, a more difficult pollution problem is being attacked just as wholeheartedly, may be solved by year-end. Out of five orders to stop discharge of improper waste effluents into rivers and creeks, three were carried out promptly and the other two plants concerned are approaching compliance.

Four Firms in Clear: Among concerns that already have licked their principal pollution posers there are Chemical Specialty Co., Cook Paint & Varnish, Mathieson Chemical, and Merichem. Farragut says a good start on abatement has been made at National Lead Co. (Baroid Div.) and Teen-Tex Chemical & Alloy Co. Conferences have been held at the Houston area plants of Armour Fertilizer,

Best Fertilizer, Consolidated Chemical, Diamond Alkali, Du Pont, Gulf Chemical, and Nyotex Chemical.

In the smaller towns of the industrial complex along the Houston Ship Channel, the improvement in air pollution control has been particularly noticeable and welcome. This is confirmed by William Philpot, now starting his fifth two-year term as mayor of Galena Park, who assures that “great progress has been made in air pollution abatement in our area.”

“Millions of dollars are being spent for new and improved equipment,” Philpot points out. “New methods are being put into effect as rapidly as they are discovered. Much time and money are being spent in the search for new ways and means to reduce



EQUIPMENT AND INGENUITY: At Merichem, a



MAYOR PHILPOT: For petrochemical firms near his town, official plaudits.

our pollution. The newly created county agency for air and stream pollution abatement is cooperating with industry, and much progress is being shown since this systematic approach has been taken. The people are now confident that residential and industrial development can go ahead without fear of injury from industrial air pollution."

Sulfur Fumes Conquered: To the average citizen, all that the oil and chemical companies have done about pollution simply means that fresh air and clean streams are commonplace again. But to people in the industry, there's a story in each plant's pollution control program. Following are reports on gains at some of the area's major plants:

- At Nyotex Chemical, engineers have been working for more than four years to capture fumes from the aluminum chloride and hydrogen fluoride plants. At the latter unit, a more efficient spray scrubber of the labyrinth type not only catches all but a trace of the tail gases but also has resulted in longer life for blowers on the new tower. At the aluminum chloride plant, a closed conveying and condensing system has halted most of the escape of fumes, and the changes that were made in operations are described as improvements.

- Mathieson has installed a \$340,000 sulfur dioxide scrubber in its sulfuric acid unit, a \$200,000 odor eliminator in its fertilizer unit, and two bag-type dust filters costing more than \$50,000 in its bagging section. Recovered sulfur dioxide is returned to the acid unit for conversion into sulfuric acid. The fertilizer dust recovered by the filters was "sufficient to amortize its cost in a relatively short time." Five more bag filters, costing about \$95,000, are expected to be installed by next week.

- Consolidated Chemical Industries, Inc., put into operation last week a new steel stack—300 ft. high, 6 ft. in diameter, weight 65 tons, with an additional 12 tons of platforms and ladders—that will carry residual gases high enough so that they'll be diffused into the atmosphere. Construction of a second stack of similar size will be started this month.

- Merichem solved its problem of pollution from hydrogen sulfide and a small volume of mercaptans by spraying a counteractant into the air near the point at which those odors escape.

- Several years ago, Du Pont's La Porte plant stopped the escape of dimethylamine—with its characteristic fishy odor—by tightening the closed system under pressure and through closer observation of equipment.

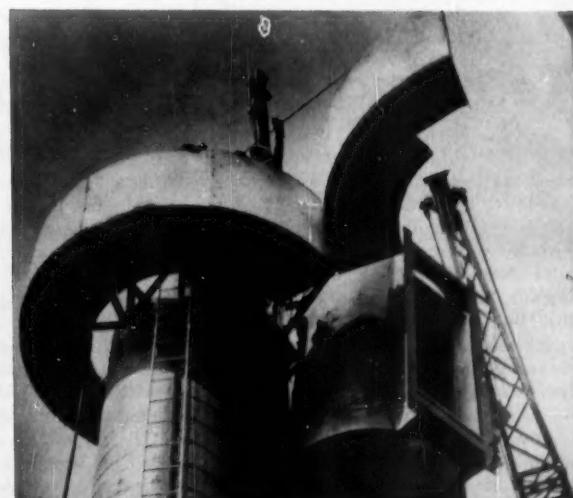
- Without fanfare, Champion Paper & Fibre—through its separate department staffed with air pollution specialists—has cut down on dust emission from the lime plant, reduced stream pollution, curbed the escape of fly-ash by nearly 95% with electrostatic precipitators, and shaved its fresh water requirements by approximately 20%.

- Built-in equipment appears to be preventing pollution at the Phillips Chemical plant that opened at the Adams Terminal site several months ago. In the ammonia unit, special burners in the boiler fireboxes convert carbon monoxide into carbon dioxide; and in the triple superphosphate unit, a filtering system with venturi-type scrubbers and cyclone separators removes fluorides, phosphate dust.

- Late in 1952, Shell Chemical installed at its Houston plant a sulfur recovery unit that takes hydrogen sulfide out of waste refinery gases and converts it into 99½% pure sulfur at an annual rate of more than 13,000 tons.

- Best Fertilizer eliminated the objectionably sweet odor of alkyl-ation acid used in ammonium sulfate production by installing an incinerator and by addition of counteractants to the material being processed.

- Sinclair Refining has contracted for a sulfur recovery unit that will produce 30 tons/day of sulfur from refinery gases.



counteractant for mercaptans; at Nyotex, a new spray scrubber for hydrofluoric acid plant; at Consolidated Chemical, a new 300-ft. stack.



BANKER-FARMER LIAISON means more fertilizer, more soybeans in Amsterdam, Mo.



COMPANY ENVOYS make university contacts (left), talk with distributors.

Teaming Up with Bankers

Synthetic nitrogen producers this week are looking ahead to an unprecedented 3-million-ton capacity by 1955—which will be generated in part by the recent necessity certificates issued by the Office of Defense Mobilization (CW, June 26, '54, p. 25). But one big question remains unanswered: how long will ammonia producers be able to ride the farm-demand wave.

One company at least—Spencer Chemical Co.—isn't just waiting to see what happens. Harking back to an old 19th century doctrine—enlightened self-interest—Spencer is busying itself with a long-range campaign to en-

courage better farm management that company executives hope will: (1) bring higher profits to the farmer and (2) mean higher profits for Spencer.

Spencer's reasoning runs something like this: Against the 3-million-ton domestic capacity plus 400,000 tons imported annually, the Dept. of Agriculture has projected 1955 farm demand for fixed nitrogen at 2,200,000 tons. Even if you add annual industrial and military consumption of 500,000 tons, it still leaves a demand deficit.

Plan of Attack: Spencer recognized that it could do little about increasing industrial use of ammonia, but felt it could do something about boosting

farm consumption. (Agriculturalists have long warned the farmer he's not using half the fertilizer he should to get maximum production.) To help spread this gospel (and company goodwill), Spencer now has a team of agronomists in the field working hand-in-glove with the various agencies that encourage—among other practices—increased use of fertilizers, e.g., agricultural colleges, county agents, vocational schools, youth groups. In every important farm state, company experts are bustling about making speeches, helping with demonstrational programs, supervising work done as part of Spencer's grants-in-aid to colleges.

The company's capitalizing, too, on another indirect approach via the Spencer-sponsored "Distinguished Farm Bankers" program—that culminated recently when six prominent Midwestern bankers* sat down together in Kansas City to talk about farming methods and agricultural finance. Realizing the banker is pivotal in farm communities—where folks borrow every spring and pay back every fall—the company figures the banker can do a lot to promote intelligent farming practices. One of the banking group's recommendations: "that bankers make every possible effort to interest borrowers in better farming techniques and to make sure the loan granted will be used to finance these operations."

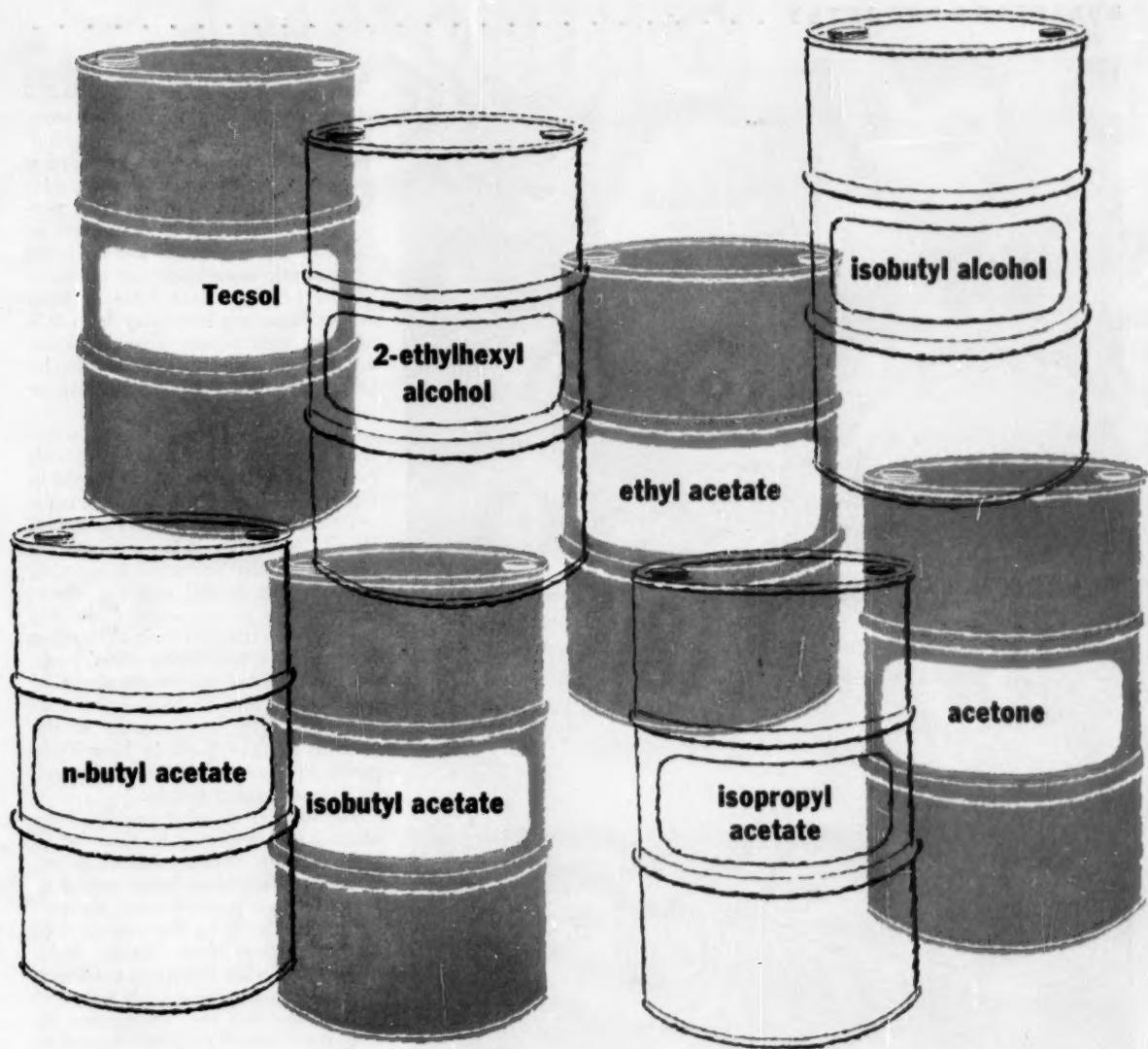
The six bankers were nominated and elected by colleagues in their respective states, wined and dined at Kansas City, lionized by the farm and bank press.

Naturally, Spencer although it isn't feigning altruism, realizes that it won't be the only company to profit from its own campaign. Few farmers and no bankers care whose ammonia is in the fertilizer. But company executives figure their project will be justified if they get a fair slice of a bigger synthetic nitrogen pie.

Not everyone agrees, of course, that ammonia producers are going to be burdened with ammonia-disposal problems next year. In fact, the National Fertilizer Assn. asserts that any excess of supply over demand will be but temporary, exudes confidence in the long-term prospects.

None will deny, however, that some ammonia makers will face temporary troubles. Spencer, in building its farmer-banker alliance, is gearing up not only for the short haul but also for the long pull.

* Included: John Crocker, Decatur, Ill.; Donovan Crooley, Minneapolis; Robert Downie, Garden City, Kan.; E. J. Evans, Amsterdam, Mo.; James Kenner, Hebron, Neb.; Roy Sweet, Story City, Iowa.



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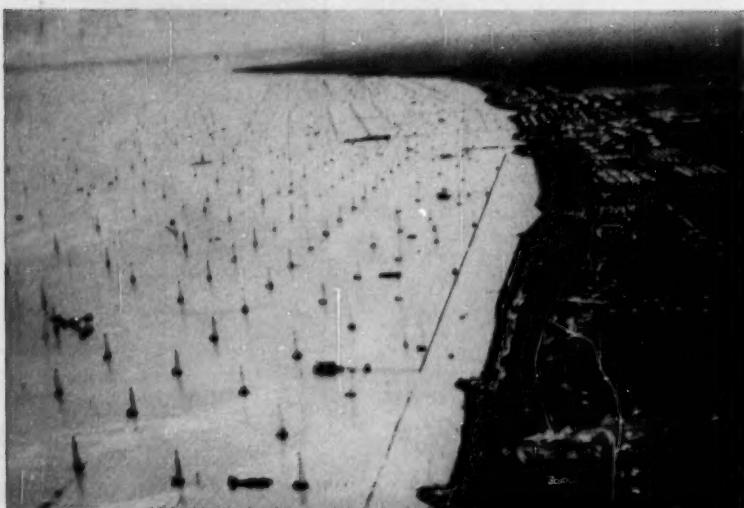
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U. S. Eyes Are on Venezuela

U.S. chemical producers, who admit they've found a gold-lined bonanza in Venezuela, say Horace Greeley was wrong. He should have advised young men—"Go South—to Venezuela." Reason: the country, long fabulously rich in oil, is fast becoming a major iron ore producer, has one of the world's soundest currencies, is currently demanding U.S. chemicals in ever-increasing quantities.

Typical cross-section of U.S.-owned companies with plants or branches operating in Venezuela: Abbott Laboratories, Procter & Gamble, Celanese,

and Firestone Tire & Rubber. Moreover, during 1952 Venezuela imported over \$35.6 million worth of chemicals from the U.S.—topping record-breaking 1951 by over \$1 million. And last year (though returns are not yet official) the figure rose by an additional \$1.5 million.

Back of the boom lies a factor of vital interest to U.S. producers. The buying power of Juan Bimba (Mr. Average Venezuelan) has risen 63% in the past eight years; today the country ranks as the U.S.'s fourth largest cash customer (following Canada, Mexico and Cuba).

Something Special: But of perhaps even more interest to U.S. chemical companies seeking to develop overseas interests is an unusual feature (for South America) of Venezuelan business law. Commercial companies "organized abroad for the main purpose of engaging in commerce or industry in Venezuela" are regarded as domestic companies—are accorded all the privileges that domestic firms enjoy. Taxes are low (vary from 0.5-15% on gross income—after numerous and liberal deductions); dollars can be taken out of the country with little or no red tape.

Unlike many Latin American countries, moreover, Venezuela has virtually no bars on imports, hasn't sought to block them even when the home manufacturing industry was developing. Why? Economists, in the area, say the reason's simple. Venezuela is savoring a boom that is still coursing along, thanks to a governmental "Sow the Oil" program that has been channeling bolivars back into the workers' pockets. And the bolivar (worth about 30 U.S. cents) is 94% backed by gold—cached partly in the vaults of the Federal Reserve Bank in New York, partly in Venezuela's Banco Central, its federal reserve system.

Population's growing rapidly, too—offering ever-widening markets for all types of chemical end products. In one line alone—fertilizers—home consumption has been boosted since the end of World War II by the migration of 20,000 farmers from Spain, Italy, France and other European countries.

Biggest users of chemicals today, of course, are still the Venezuelan oil companies—which rank only second to U.S. producers in total annual output. Prosperity—to a marked degree—hangs naturally upon their continued production records. "And," as one Venezuelan oil company president says, "there's no real reason to suppose that expansion won't continue unless some of the pending bills in the U.S. Senate and House of Representatives curtail oil imports to the U.S."

Chemical companies (who have already invested \$2.1 billion in the South American Republic) seem confident that the boom is a durable one. Caracas' spirited 5-year building boom, likely unmatched by any U.S. city, has to be seen to be believed; currency is flowing freely, indicative of a sound prosperity.

Main question asked by U.S. businessmen in Venezuela today: When will the bonanza attract an influx of competition—from other North American and European firms? Such a fertile field for expansion can't go unrecognized much longer.

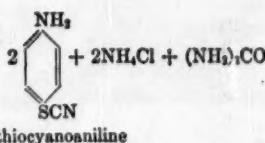
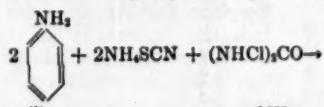
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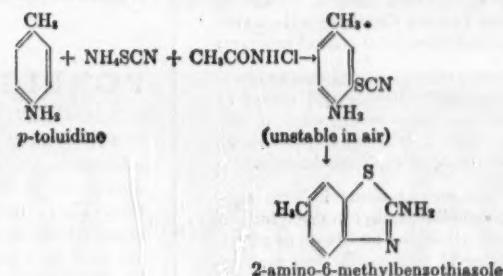
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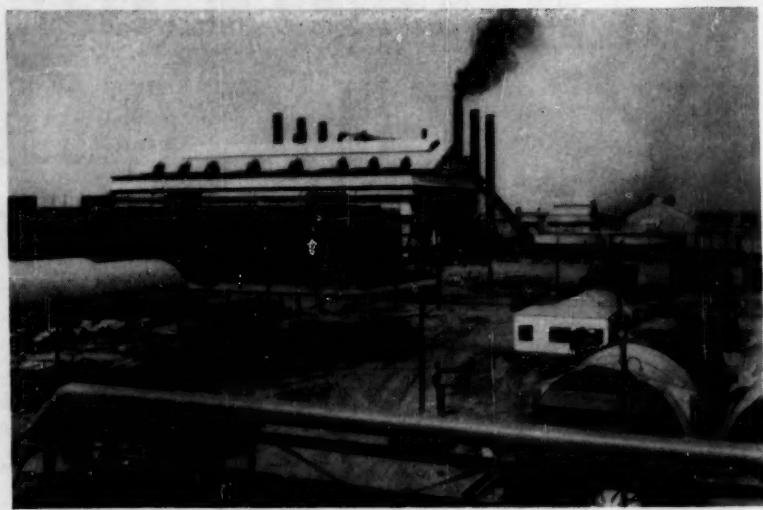
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BUSINESS & INDUSTRY



FOREIGN

Industry/India: Even with output at Sindri (see cut above) rolling along at all-time highs, Indian consumption of chemicals is still outrunning production. That's the reason why the government of India's import policy for the half year July-Dec. '54 is likely to be liberalized to the tune of over \$60 million. Immediate impact on U.S. chemical exporters: quotas on various chemicals will be increased; many hundreds of applications for new import licenses will probably be passed.

Farben Splinters/Germany: The major West German successors to the former I. G. Farben combine say they expect last year's production and sales increases will be followed by another "brisk year" this year. Best estimate: combined sales of the successor companies now exceed 2,900 million marks—fully a third of the entire West German chemical industry.

Export records of the Farben successors are even more impressive. In toto, exports run between 30-40% of total sales—or over 900 million marks—out of a total West German export of 2,324 million marks.

Fertilizer/Egypt: The National Production Council, Cairo, has invited international bids to implement plans for Egypt's contemplated fertilizer plant in the Khattara region, north of Asswan. Cost of the project: £E22 million; estimated capacity: 370,000 tons/year of nitrate fertilizer—sufficient to satisfy total home needs.

The plant, when completed, is ex-

pected to save Egypt some £E10/year—besides reducing the cost of fertilizer for local farmers. Latest date for acceptance of bids: Oct. 15, '54.

Terylene/Canada: Imperial Chemical Industries of Canada has started production of terylene from its \$20-million plant at Millhaven, Ont. Full operation is expected by September next year.

Cellulose/Chile: The Chilean government is examining an offer by West German industrialists to finance the construction of a cellulose plant in South Chile. The project is part of a Chilean scheme to increase utilization of Chile's timber supplies, cut down on imports of newsprint.

Maleic Anhydride/Great Britain: Monsanto Chemicals, Ltd., London, will start work soon on a plant to produce maleic anhydride by direct oxidation of benzene, at Ruabon, North Wales. Capacity has not been revealed, but company officials say "it should be sufficient to cater to all the known needs of the U.K.'s industry."

Caustic Soda/Iraq: Construction work will start soon on a plant to produce caustic soda in Iraq. Capacity: 1,500-3,000 tons of caustic soda annually. Backing the plan: the Industrial Bank, Baghdad, and Iraq's soap-producing companies.

At present, Iraq imports more than 1,500 tons of caustic soda annually at a cost of over \$150,000. Some 900 tons is ticketed for soap production; the bulk of the remainder goes into vegetable oil refining.

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BUSINESS & INDUSTRY



EVANS: Leaning toward chemicals?

Cash and Carry

Following the familiar pattern of expansion through acquisition, H. K. Porter Co. has increased its sales seven-fold since 1949—from \$9.4 million to \$64.4 million last year. But unlike most chemical companies, its purchases of all new properties are on a strict cash basis. Reason: management feels that when cash is paid for all major purchases, stockholders benefit from the increase in the company's earning power without suffering any loss of equity.

Of perhaps even more immediate interest to chemical men however, is the recent value H. K. Porter has put on chemical process firms. Its two latest acquisitions were Pioneer Rubber Mills, Inc., Pittsburgh, Calif. (CW, June 5, p. 16), and the McLain Fire Brick Co. Pioneer alone should add over \$5 million to total sales figures this year—will make the company's Quaker Rubber Corp. facilities one of the largest producers of industrial rubber goods in the U.S.

Acquisition of McLain Fire Brick (reportedly the world's largest producer of pouring pit refractory brick and specialty fire clay products) will add an additional \$10 million to sales, and gives Porter a strong position as supplier of products to the steel industry.

Logical question in many minds: will the trend continue, and if so, where will it lead next?

How It's Done: In essence, H. K. Porter is today still basically a holding company—controlling a number (ever-growing) of separate divisions. Necessary cash for all major purchases is garnered from retained earnings, disposal of unprofitable

properties, preferred stock issues, and the issuance of long-term securities. President Evans tends to gravitate toward purchase of companies either family-owned—or very closely controlled by a limited number of stockholders.

Cash on hand at the end of 1953 amounted to \$8.1 million; current assets (\$24.1 million) exceed liabilities (\$8.1 million) by nearly three-to-one. As one observer puts it: "Porter looks ready for another acquisition in the near future."

LABOR

Still Ascending: With the 10¢/hour package increase now accepted as the formula for the new steel labor contracts, there's no break in sight in the upward trend in industrial pay rates. Latest examples of bargaining pacts in chemical and related industries:

- Chemical—Solvay Process Div. of Allied Chemical & Dye Corp. is elevating wage rates by 5¢/hour for production employees at its plant in Syracuse, N.Y. The two-year contract with District 50, United Mine Workers, also provides for the 17¢ cost-of-living bonus to be incorporated into base pay rates, and offers additional insurance benefits on a contributory basis.

- Aluminum — Wage increases ranging from 7¢ to 13¢/hour are in store for employees of Aluminum Co. of Canada at Kitimat, British Columbia. The Aluminum Workers' Council (AFL) signed a two-year agreement calling for 1¢ higher shift differentials and medical insurance benefits.

- Atomic energy—at Oak Ridge, Tenn., some 2,000 members of the International Brotherhood of Electrical Workers (AFL) are to receive a 6¢/hour pay rise that will bring their wage rate up to \$3/hour.

- Petroleum—A general 5% wage increase at eight oil refineries and pipeline companies in the vicinity of Toledo, O., is what the Oil Workers International Union (CIO) is seeking. A union spokesman said this request is based on increased productivity and on economic conditions in the industry.

- Rubber — Delegates of the United Rubber Workers (CIO)—claiming to represent 108,500 workers at 46 plants of the "Big Four" rubber companies—are bargaining with management officials for a "substantial" general wage increase. Talks are being conducted in Cleveland with Firestone, in New York with

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BUSINESS & INDUSTRY



NLRB'S RODGERS: In staff shake-up, he may take over counsel's duties.



TEAMSTERS' BECK: At some chemical plants, his union can halt all output.

U.S. Rubber, and in Cincinnati with Goodyear and Goodrich.

whose term expires this December but who could be asked to resign.

The Tie That Binds: Truck drivers who are members of Dave Beck's Brotherhood of Teamsters (AFL) make up the connecting link between producers and customers for numerous chemical companies, and sometimes this tie is broken for reasons that are beyond the control of chemical management. In the latest instance, the chemical firm was able to use alternative means of transportation, but occasionally a teamster strike against an independent truck line can force a shutdown at a chemical plant.

Latest strike of this kind kept nearly 400 truck drivers idle for almost a month in Salem and Cumberland Counties, New Jersey. One of the trucking companies involved was the H. G. Cline Co., which hauls finished dyestuffs and chemicals to and from Du Pont's Chambers Works and Carneys Point plants. Settlement of the strike included a 10% wage increase for the drivers.

For Firmer Spirit: In the light of recent criticism that many Democratic-appointed field officials of the National Labor Relations Board are still hostile toward the Taft-Hartley law, some Washington observers are predicting a shake-up among NLRB personnel. They see a chance that President Eisenhower might ask Philip Ray Rodgers, a Republican member of the board, to become general counsel and take charge of the field staff. Present general counsel is George Bott, a Truman appointee

Expanding Effects: A work stoppage at the Electro Metallurgical plant at Niagara Falls, N.Y., was threatening to cut the supply of acetylene for five neighboring chemical plants—those of Carbide and Carbon Chemicals, Niagara Alkali, Pathfinder Chemical, B. F. Goodrich Chemical, and Du Pont Electrochemicals Div. The walkout started as a wildcat strike after five men in the prototype unit were suspended for participating in a sit-down over a grievance, but later the approximately 1,500 employees represented by the United Gas, Coke & Chemical Workers (CIO) voted to make the strike "official."

LEGAL

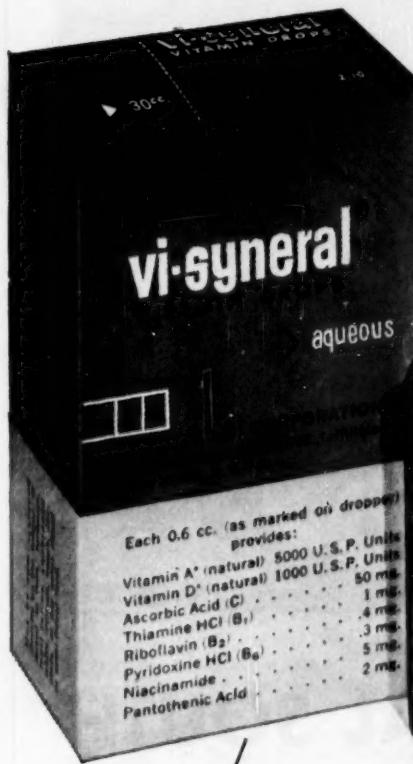
Fluoridation Triumph: Oklahoma's state supreme court has ruled that the state legislature was within its rights when it passed a law authorizing cities to fluoridate their water supplies. Opponents of fluoridation in Tulsa had asked the court to nullify that law.

Schering Seeks Release: Staging a brisk legal battle to be released from the terms of the 1952 agreement that covered transfer of the firm's management from the Alien Property Office to private owners, the Schering Corp. has filed new arguments in the suit over licensing of Schering-held patents. The new line of reasoning proffered by Schering attorneys is expected to necessitate more time for consideration on the part of District Judge Richard F. Hartshorne in fed-

since 1943

Glycerine

is the Vehicle



Over 40,000,000 bottles of water-soluble vitamins A and D, with Glycerine as an important ingredient, have been sold by U. S. Vitamin Corporation since 1943. Vi-Syneral Vitamin Drops, their leading product among these oil-in-water solutions, is fed to infants and young children, often from the first week of life. U.S.P. Glycerine, an ideal vehicle for the vitamins, meets Vi-Syneral's rigid standards of purity and uniformity.

Pharmaceutical companies often select Glycerine as an ingredient in a product because it performs not just one function but two or three.

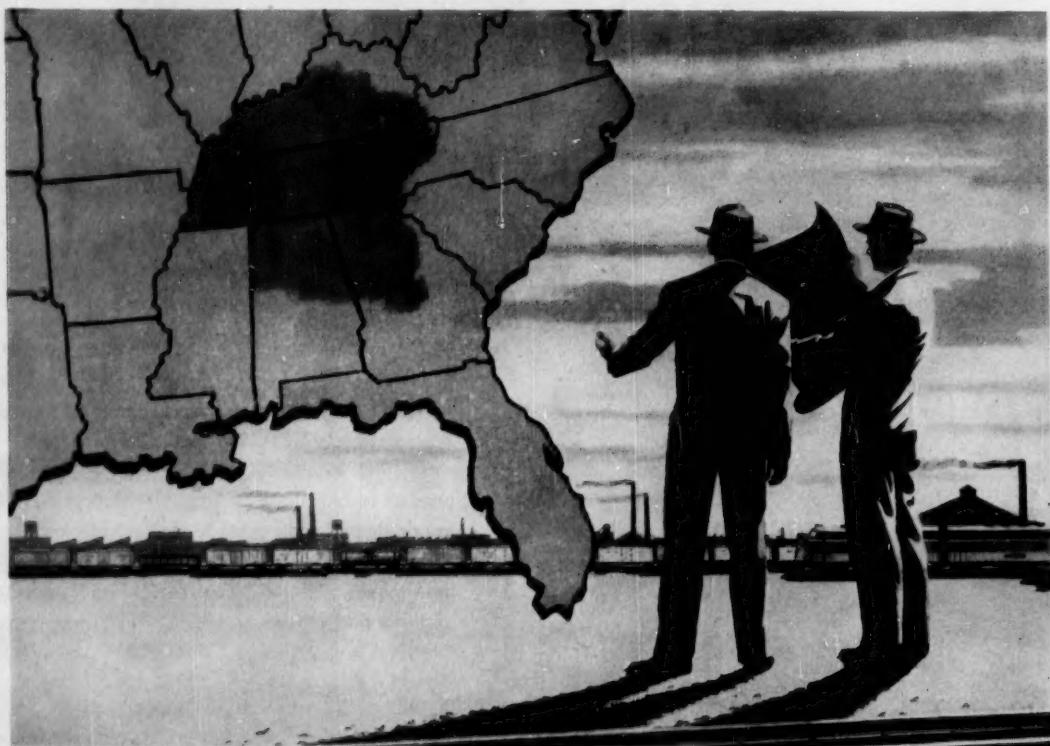
U.S.P. Glycerine's versatility cannot be matched. Though Glycerine is used primarily as a vehicle in Vi-Syneral Drops, it also acts in this formulation as a solvent, flavor, and preservative.

Other pharmaceutical formulas use Glycerine as an emollient . . . demulcent . . . stabilizer. It is physiologically safe. Glycerine is reported to be an ingredient in over 50% of all liquid medications compounded by the druggist.

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B & I



EX-PROSECUTOR McGRANERY: In Schering case, he asked liberal licensing.

eral court at Newark. Earlier, Schering and the Dept. of Justice had agreed in a stipulation that the government had exerted compulsion on Schering officers and directors, "including fear of imprisonment," in order to have them sign the 1952 contract. The two parties are asking Hartshorne to decide whether the government had the right and authority to require Schering officers to execute that document. The government's suit—filed by James P. McGranery, then U.S. Attorney General, late in 1952—is intended to force Schering to grant licenses at reasonable royalty rates on certain patents held by the formerly German-owned pharmaceutical concern; Schering wants to be free to grant or refuse such licenses as it sees fit.

Patent Petitions: Also pending in U.S. District Court at Newark are three patent suits of chemical interest. All three suits are being contested.

• Alleging infringement of its patent No. 2,255,313 on ethylenic-alpha-beta synthetic resins, Ellis-Foster Co. of Montclair, N.J., has brought suit against Reichhold Chemicals. In reply, Reichhold denies that it's infringing the patent and also challenges the validity of the patent, arguing that the products and processes claimed in the patent are not practical. Reichhold also asserts that the claims under the patent in question were already covered by Ellis-Foster's previous patent No. 2,195,362; and that the patent should be declared void in view of prior discoveries revealed in nine U.S. and two German patents.

• U.S. Chemical Corp., Metuchen,

BACKGROUND: PHOTOMICROGRAPH OF A LAYKOLD ASPHALT EMULSION

No lower cost multi-purpose emulsions are available to industry. Laykold Asphalt emulsions are being used as additives, extenders, adhesives, binders, coatings and sizings.

Use *Laykold*[®] Chemical Type Asphalt Emulsions to lower base material costs in your product

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THESE USERS ARE SAVING MONEY

1. Special plywood resin glue was very expensive. Extension with an emulsion cut the cost without serious loss of holding power.
2. Special asphalt emulsions of unusual stability are used in compounding undercoaters and sound-deadeners.
3. A new light-weight building material was bulked with a Laykold emulsion, giving added insulation and water-resistance at low cost.
4. A costly latex emulsion adhesive was easily extended with a compatible low-cost emulsion product.
5. A company making their own asphalt emulsions for compounding into a flooring adhesive found that they could purchase a basic Laykold product in bulk at less than their own manufacturing cost.
6. Both the wet and dry strengths of a variety of paper products were greatly improved and costs lowered by the addition of Bitusize asphalt emulsions.
7. Mineral fillers, fibres and aggregates of all kinds may be coated or bound in the moist or dry state with various Laykold emulsions, to produce unusual end products.

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We'll be glad to help you develop an asphalt specialty product designed to your requirements. For samples or further data, call or write our office nearest you.

B & I

N.J., is suing Plastic Glass Corp., Newark, asking damages for alleged infringement of patent No. 2,668,328 on patterned plastic sheets and for an injunction against further infringement. Plastic Glass Corp. asks that the suit be dismissed, contending that 13 prior patents issued between 1910 and 1953 would prove that the USCC patent does not represent an original invention. The defendant also filed a counterclaim, asking that USCC be enjoined from threatening further legal action against Plastic Glass or its customers.

A substance made of "cashew nut oil modified to a dry, infusible state" is the material at issue in the case of Harvel Corp. (Irvington, N.J.) and Minnesota Mining & Manufacturing Co. (St. Paul) vs Colloid Chemical Laboratories, Inc. (Cedar Knolls, N.J.) Patent No. 2,165,140 on that substance was issued to Harvel in 1939, according to the complaint; and Irvington Varnish & Insulator Co. was the exclusive licensee until July '53, when the license was assigned to 3-M. Colloid Chemical has not yet filed its formal answer, but officers of the concern told CW they don't believe their products are an infringement, and that they'll contest the suit.

KEY CHANGES . . .

Arthur P. Berry, to president, El Dorado Oil Works, El Dorado, Kan.

C. I. Bradford, to president and member of the board, Rem-Cru Titanium, Inc., Pittsburgh, Pa.

H. E. Martin, to president and director, Metal & Thermit Corp., New York.

Augustus B. Kinzel, to director of research, Union Carbide and Carbon Corp., New York.

Richard M. Lawrence, to director of business research, Wyandotte Chemicals Corp., Wyandotte, Mich.

J. C. Wessel, to controller, Ferro Corp., Cleveland.

George H. Berryman, to director of Clinical Investigation, Abbott Laboratories, North Chicago.

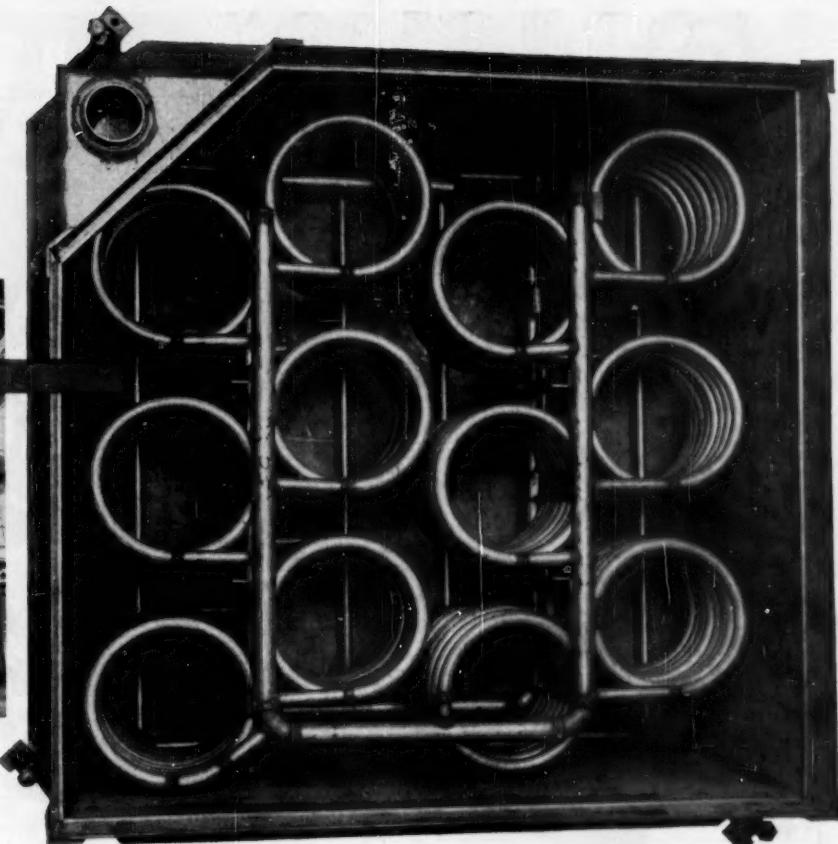
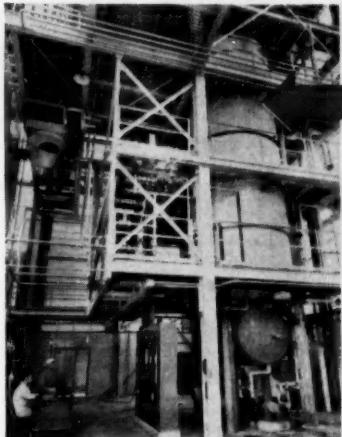
Chester F. Hockley, and **Marlin G. Geiger**, to directors, W. R. Grace & Co., New York.

Hiram B. Young, to vice-president in charge of Eastern production, and **Thomas E. Moffitt**, to vice-president in charge of Western operations, Hooker Electrochemical Co., Niagara Falls, N.Y.



**CHEMICAL MANUFACTURING CO.
INCORPORATED**

A 7,500 pound-per-hour Votator Semi-Continuous Deodorizer installed at Bayonne, N. J. This is designated a semi-continuous deodorizer because the oil is processed in small, individual batches. Deodorizer proper consists of tall, cylindrical carbon steel shell, inside of which are supported five superimposed trays made of stainless steel. Right: Cooling or heating coils, made of stainless steel.



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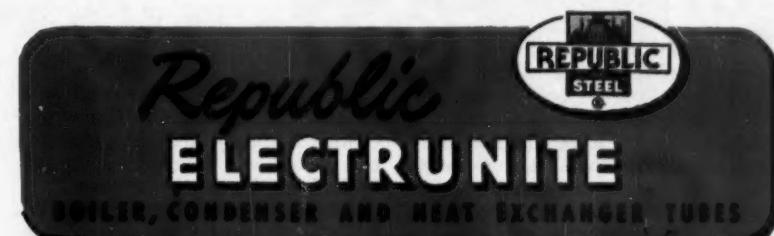
Your engineers know what we mean by the bending qualities of Republic's ELECTRUNITE Stainless Steel Pipe. It comes from the uniformity of the ductile steel, produced and quality-controlled by Republic in its own plants. The result is smooth, accurate coils.

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Export Department: Chrysler Building, New York 17, N. Y.



PRODUCTION

THE MONSANTO PLAN: Organized control with assists by gambling gnomes saves up to \$1 million/year.

No Place to Hide

For the past seven years, Monsanto Chemical Co. Plastics Div. (Springfield, Mass.) has averaged \$1 million/year return on a pennyworth cost-control investment. The program, paying its way from the start, has added \$1 million to the preceding year's operational savings each year since 1946. Although most of the more lush areas have already been tapped by cost-consciousness, the company expects to save \$1,200,000 this year through continuing cost control and reduction.

Drawn tight by increasing postwar competition, industry's margin of profit could no longer hide the wrinkles of lax operations, declares Monsanto's Plastics Div. production manager John Garrels, Jr.; the production bed had to be remade from the bottom sheet up. Subscribing to the theory that no savings is too small to be reflected in increased profits, and that cost control is a management responsibility, Garrels wasted no time in setting up the program and placing it under the di-

rection of production control manager Donald Ewerwelt upon the latter's release from the Navy.

Bierwert, in turn, remade the wrinkled bed quickly and well, established the program on a self-sufficient basis so that today it requires only a small part of his time—which is the operation's principal expense item. Art work, displays, and other visual and physical program aids have been created by Monsanto's regular employees, mostly on their own incentive and time. The company grants no rewards beyond those offered through the standard employee suggestion system.

Organization Is the Key: Following World War II, the first phase of the program began with a study of company organization, followed by a reorientation of responsibilities. Increased authority, including that for cost control, was passed down the line to the lower levels of supervision.

Bierwert composed and dispatched bulletins to department heads. The

first one treated cost control program organization at the departmental level, directed supervisors toward the most profitable lines of investigation. Overseers were assigned as program coordinators, assisted department heads whenever needed. Action was stressed above all; "buck passing" was given no quarter.

Succeeding bulletins covered raw material costs. Studies initiated in 1947 clearly indicated that the company's biggest potential savings lay in reducing raw materials cost. A special publicity program focused on this area with the help of two cartoon characters (*see illustration*). Employees learned to know careful, efficient "Scoop" and sloppy, inefficient "Droop" from handouts and posters distributed throughout the plant, gradually improved both yield and quality of their production.

Following phases of the program concentrated on areas such as supervisory effectiveness, laboratory control, productivity, quality, material han-



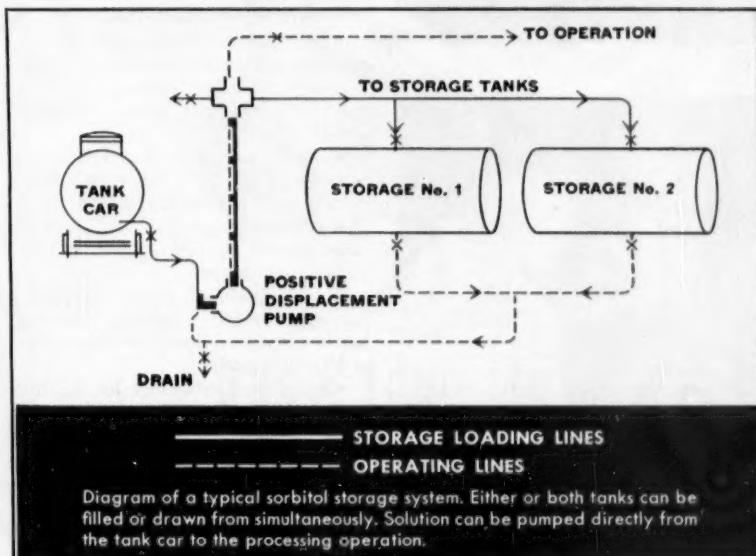
ATLAS

Home-Memos

CHEMICALS DEPARTMENT
Atlas Powder Company
Wilmington 99, Delaware

Atlas Powder Co., Canada, Ltd.
Brantford, Canada

How to save money by buying and storing sorbitol in bulk



PURCHASING sorbitol solutions—Sorbo®, Sorbitol Special or Arlex®—in tank car lots offers several specific sources of savings. First, you save \$880 per tank car (88,000 lbs.) on the material itself, because of the lower bulk price in comparison with carload lots of drums.* Equally important, the costs of handling are sharply reduced by switching to bulk storage. Handling can be completely mechanized, warehouse space formerly required for full and empty drums can be put to productive use, and paper work and inventory labor are substantially reduced. More complete utilization of material is obtained, for tank cars can be thoroughly drained more readily than drums.

Tips on storing sorbitol solutions

Anyone accustomed to handling bulk chemicals will find sorbitol relatively simple to store. It is non-corrosive and non-inflammable, does not decompose in

*Based on present prices, subject to change without notice.

storage. It is relatively unaffected by high humidity storage conditions, picking up less moisture than other common polyols when left exposed. It is compatible with other polyols, sugar solutions, sulfonated oils, etc. and may be mixed with such materials in storage if desirable. Since it is non-volatile, it creates no vapor problems.

Choosing materials. The choice of material for storage tanks and piping is determined by the length of storage, degree of purity required, and installation cost. The following is the usual order of preference of materials:

1. Stainless steel (solid or clad)
2. Aluminum
3. Tanks coated with a protective resin
4. Tanks protected with a suitable lining of tin, glass, rubber, etc.

The use of iron piping and tanks, while satisfactory in some plants that use large quantities of sorbitol, is not usually recommended since sorbitol, like many organic materials, will eventually "scour" the inside of an iron tank. This may lead to absorption of iron oxide and some discoloration.

At the Atlas plant, we use stainless steel storage tanks, and ship in stainless steel or aluminum tank cars.

Preventing thickening in winter. Like many other solutions, sorbitol solutions thicken at low storage temperatures, and the highest purity solution, Sorbo®, will tend to crystallize in addition to thickening. For ease of handling, all sorbitol solutions should be kept at 70°F. or higher. This can be accomplished readily by circulating hot water through submerged heating coils of stainless steel or aluminum. Low pressure steam can be used provided reasonable precautions are taken to avoid prolonged localized overheating. If crystallization occurs, the solid sorbitol redissolves on heating, without affecting quality.

Pumping sorbitol. A positive displacement pump made of stainless steel or aluminum is recommended for withdrawing sorbitol from the tank car. Centrifugal pumps can be used, when viscosities are below 100 cp. If facilities are available, the car can be "blown" instead of pumped. Viscosity data for pumping is listed in the table below.

	SORBO	SORBITOL SPECIAL	ARLEX
Viscosity cp. @ 77°F.	Approx. 110	Approx. 300	Approx. 2200
Specific gravity @ 77°F.	Approx. 1.30	Approx. 1.32	Approx. 1.35

Your local Atlas sales representative will be glad to work with you on your specific storage problem. For further information on prices and characteristics of the various sorbitol solutions, write to Atlas today.

PRODUCTION



TWO-WAY RADIOS AND INVENTORY CONTROL chalk up savings.

COST-SAVING TALLY

	1951-52 Average	1953
Productivity and labor	\$309,900	\$509,000
Raw materials and supplies	278,700	227,600
Traffic	17,500	142,400
Quality	118,250	68,400
Containers and packaging	81,950	51,900
Repairs	29,000	17,000
Utilities	24,450	4,200
TOTAL	\$859,750	\$1,020,500

dling and maintenance. End results of this continuing cost consciousness were large and repetitive categorical savings (*see table*).

From Forest to Tree: Since 1951, the cost control program has converged on specific cost reductions. Each supervisor receives a form on which to list (*see illustration*) cost-reduction projects he has planned for his operating area at the start of the year, matches actual against estimated savings on a monthly progress chart. Over-all actual achievement, Garrels and Bierwert figure, has reached 80% of estimated goals.

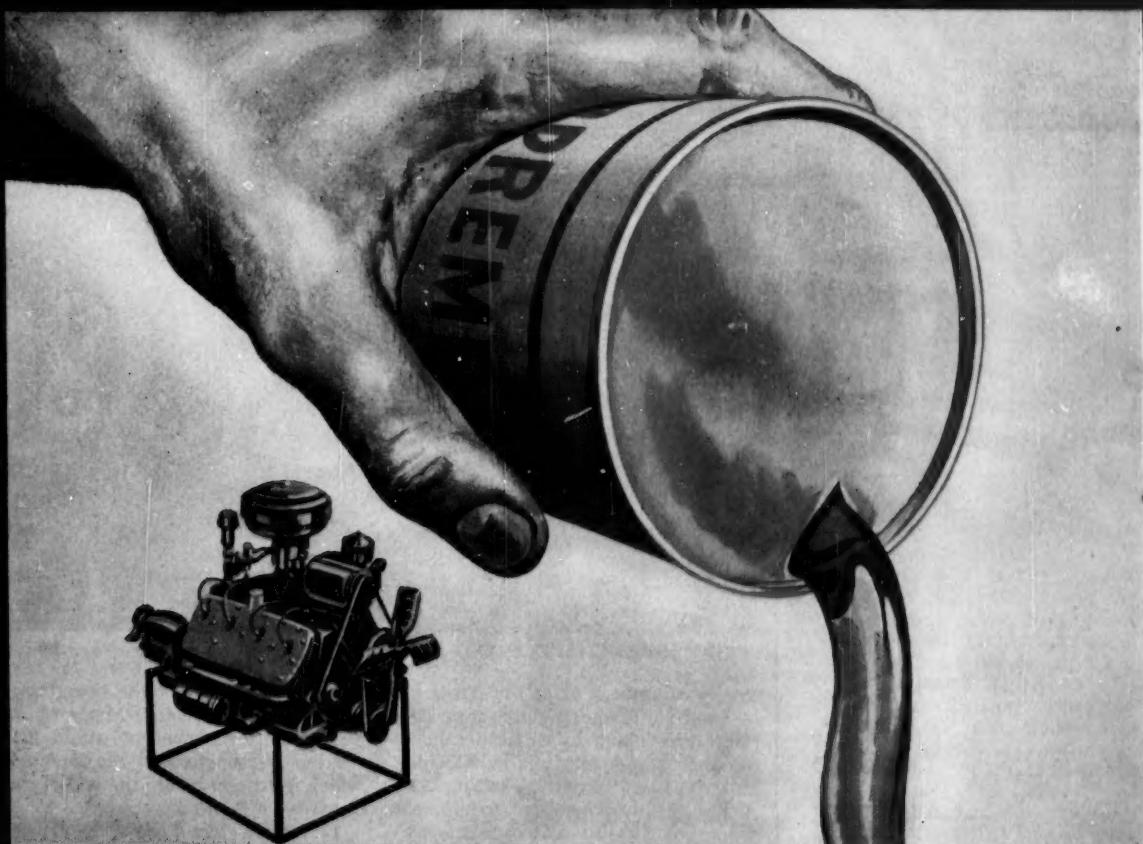
Many of the specific cost-reduction projects have paid off handsomely: savings in packaging accuracy on one product alone added up to \$18,000/year. Other rewarding returns:

- Elimination of off-quality production through careful treatment of products and intensive training of operating personnel has saved \$23,000/month.
- Revised equipment and increased operating rates have decreased direct conversion costs \$9,000/month.
- Statistical analysis to improve yield control has cut operating costs \$9,000/month.
- Installation of larger equipment has minimized delays between batches, reduced downtime equivalent to \$5,000/month.
- Redesigned container for finished products has shaved packaging cost \$2,100/month.

Later, all such gains made through the various programs were consolidated and formally established. The new ideas were re-emphasized as needed, or blue-penciled as they became obsolete because of changing operations. Standards and control indices on operating procedures, raw materials and finished goods specifications, maintenance operations and even office procedures are repeatedly reviewed and clarified, updated or discarded.

Control Offshoots: Meantime, the program has branched off along strange byways, but nonetheless continues to yield its bounties. Special safety committees, formed in one phase of the program to arouse employee safety awareness, are chalking up safety records, saving three times the total safety activities' cost on lowered insurance premiums.

Another important offshoot of the program, the suggestion system, was created to screen and reward employees' cost-cutting ideas. While no figure has been assigned the resultant savings, the company has paid out over \$11,000 for suggestions that even-



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Modern engines demand more from lubricants than just lubricating efficiency. Detergency, corrosion inhibition, and other properties have become of great importance. Among today's widely used oil additives are the calcium and barium salts of alkylphenol sulfides, such as those prepared from octylphenol and nonylphenol. These oil additives aid in the suspension of solid matter, help to retard adhesion of sludge to engine surfaces. Because the salts are derived from weak acids and

strong bases, they also inhibit corrosion by neutralizing engine acids.

Rohm & Haas octylphenol and nonylphenol are also useful in the manufacture of synthetic resins, fungicides, germicides, dyestuffs, and pharmaceuticals. They serve as intermediates for rubber chemicals, wetting agents, and emulsifiers. Octylphenol stabilizes ethyl cellulose against deterioration by heat and light. For further information about the alkylphenols, or other products listed below, simply check the coupon.

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PRODUCTION



BED-MAKERS GARRELS AND BIERWERT smoothed some expensive wrinkles.

tually will save it many times that.

In 1953, a work simplification program was initiated as a further aid to foremen and supervisors in searching out ways and means of cutting cost. It has already proved out: equipment relocation in areas more accessible to routine maintenance has reduced repair downtime a calculated \$3,000/month; investment in two-way radios for trucks and autos (*see cut*) and in an IBM inventory control system (*see cut*) for raw materials has returned a combined \$1,800/month.

Not all these savings will continue unchanged, of course. As products and processes become outmoded, Monsanto must redirect its program accordingly. But both Bierwert and Garrels feel that the more deeply hidden potential cost reductions will present "a continuing challenge as the postwar profit squeeze increases with competition." If the challenge is successfully met, profit-stealing mispractices will have no place to hide.

Relighting the Torch

If it receives its expected Congressional approval, the Bureau of Mines will be back in business shortly at Gorgas (Ala.) with a new approach to its underground coal gasification project. A joint venture of the bureau and Alabama Power Co., the project was mothballed last year (CW, July 18, '53 p. 46) when Congress refused to renew its appropriation.

But it was not forgotten by industry. Alabama Power, Stanolind and Sinclair Coal, still interested, are willing

to underwrite part of the operational expenses. The Bureau of Mines would again run the show but would first need a legislative nod of approval, which it expects before the end of the current Congressional session.

Fracturing Gel: Field-scale experiments, carried on by the bureau and Alabama Power since 1946, have proved that it is possible to maintain underground gasification, to convert otherwise uneconomical coal seams into energy.

Briefly, this is how it was done: In the operation known as electro-linking, metal electrodes were slipped into boreholes drilled from the surface into the coal seams. Electric current passed through the coal bed from one electrode to another to form a pathway of fissured, incandescent coke nearly ideal for gasification. The seam was then ignited, and air or oxygen fed to one of the boreholes.

One objection to the operation has been the dominant and potentially costly role of electricity. With resurrection of the project, experimenters will replace the electrodes with a kerosine-acid gel, try hydraulic fracturing of the underground strata—a process used in rejuvenating oil wells.

Having sufficient body to carry specially grained sand in suspension, the gel would be squeezed down the borehole into the coal formations. The gel enters the fissures, dissolves out various clays and noncarbonaceous minerals. In addition to opening up such pathways, the gel expands, creates fractures in the seam and thus establishes new passageways.

DOW

Dow Preservatives give a lasting quality to rope and twine products

*Farm baler twine treated with
Dowicide preservatives
resists attack by mold and
fungus during long periods
of barn storage*



THE DOW CHEMICAL COMPANY

Dept. DP-728A-1, Midland, Michigan

Please send me further information on the uses of Dowicide preservatives.

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DOWICIDE PRESERVATIVES accounted for this striking difference. Untreated length of baler twine (right) was exposed to rotting conditions for period equivalent to average time twine-baled hay and straw are stored in barn. Rot has caused fibers to break and separate, weakening twine to point where handling will produce breakage of twine and scattering of baled hay. Length of similar twine treated with Dowicide preservatives (left) was exposed for same period to identical rotting conditions. This twine has resisted rot, will hold the bale intact under normal handling conditions.

Treated twine has opened up new, vastly improved handling and storage methods for hay and other farm crops.

The cordage industry is but one of many to benefit through use of versatile Dowicide® preservatives. Fourteen different Dowicides currently increase manufacturing efficiency or improve product quality for the paint, paper and pulp, textile, petroleum, leather, adhesives, transportation and other industries. Your processing, packaging or selling operations might be improved by certain Dowicide preservatives. For detailed information about multi-purpose Dowicides, write THE DOW CHEMICAL COMPANY, Midland, Michigan.

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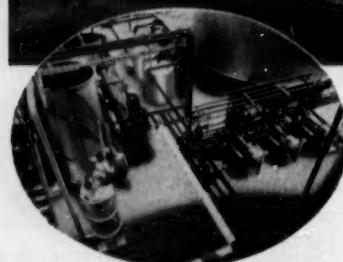
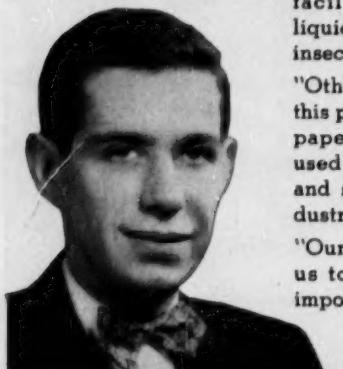
Partners in Progress...

"To keep pace with the increased use of the chemical insecticides, chlordane, heptachlor and endrin, in the war on boll weevils and 104 other agricultural and household pests, we expanded our facilities to produce, daily, 44 tons of liquid chlorine—a vital ingredient of our insecticide production.

"Other industrial chemicals produced in this plant are liquid caustic, used in soaps, paper and disinfectants; hydrogen gas, used in patent-type cooking shortenings; and sodium hypochlorite, used as an industrial bleaching agent and in antiseptics.

"Our expanded, efficient facilities enable us to better serve customers in these important fields."

Mr. Joseph Regenstein, Jr.,
Vice-President, Velsicol Corporation

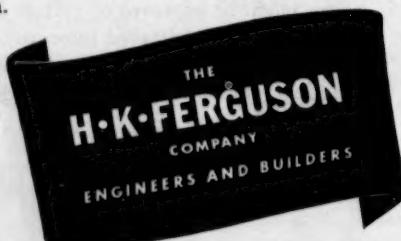


View of the brine-treating equipment area—part of the plant addition at Memphis, Tenn., which was designed, built and equipped by Ferguson for The Velsicol Corp.

Ferguson tackled this complex job of enlargement and modernization with the erection of a 110x44-foot extension of the original plant's electrolytic cell room. This was followed by the installation of nearly nine miles of intricate piping and tubing.

Other work included the erection of storage tanks, a caustic evaporation building, a rectifier installation and a modernized chlorine liquefaction building.

The latest developments in chemical processing were incorporated in this plant which was designed for maximum efficiency of operation.



EXECUTIVE OFFICES: Ferguson Bldg., Cleveland, Phone TOWER 1-6400 • NEW YORK: 19 Rector St. • HOUSTON: 2620 S. Main St. • CHICAGO: 1 N. LaSalle Bldg. • LOS ANGELES: 411 West 5th St. • CINCINNATI: 826 Enquirer Bldg. • SAN FRANCISCO: 33 New Montgomery St. • ATLANTA: 86 Forsyth St. • MONTREAL: 1015 Dominion Sq. Bldg.

PRODUCTION . . .

After the fracturing operation is finished, the kerosene-acid gel is flushed with a solvent oil and the spent kerosene and gel are returned to the well bore. The high-permeability sand, left in the opened pathways, would keep the underground network open for gasification. Thermite bombs, dropped down the boreholes, then are used to ignite the coal beds.

The experiments could do much toward paving the way for an economically feasible commercialization of low-grade coal seams; might open the way as well for a sizable jump in the gel market for specialty chemical firms.

Updating the Code

The use of cast iron for pressure vessels has long been a subject of controversy among chemical processing firms. Restricted to unfired service, they've been limited by ASME and ASTM codes to steel castings or welded construction. But a major change in these restrictions was effected recently when the Cooper-Bessemer Corp. (Mount Vernon, O.) delivered its first vessel for unfired service, a casting of ductile or nodular iron.

As Cooper-Bessemer figures it, this switch could have a considerable impact on the process industry. This is how it reasons: For some time, chemical processors have been concerned over the relatively high cost of materials and construction required in present pressure codes.

The codes were set up, it feels, at a time when foundry techniques for quality control were not adequate by modern standards. To beef up its arguments, it points to Class 60 irons, which have been restricted to design pressures of 250 psi. at temperatures up to 650 F. Minimum tensile strength for such irons normally runs about 60,000 psi., with a maximum allowable stress of 6,000 psi. at those temperatures. For mild steels having the same tensile strength, the codes permit a maximum allowable stress value of 15,000 psi.

Cooper-Bessemer's first pressure vessel, an autoclave, is already in service at the Cincinnati Chemical Works, Inc. Permission to use cast ductile iron in place of cast steel was secured from the Builder Division of the Industrial Commission of Ohio. Designed in accordance with Special Specification 258, it weighs 17 tons, holds 600 gal. It's approved for internal working pressures of 350 psi. at 300 F., with steam jacket pressures of 125 psi. at 350 F.

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Polyphos**

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SODIUM TETRAPHOSPHATE

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Phosphate**

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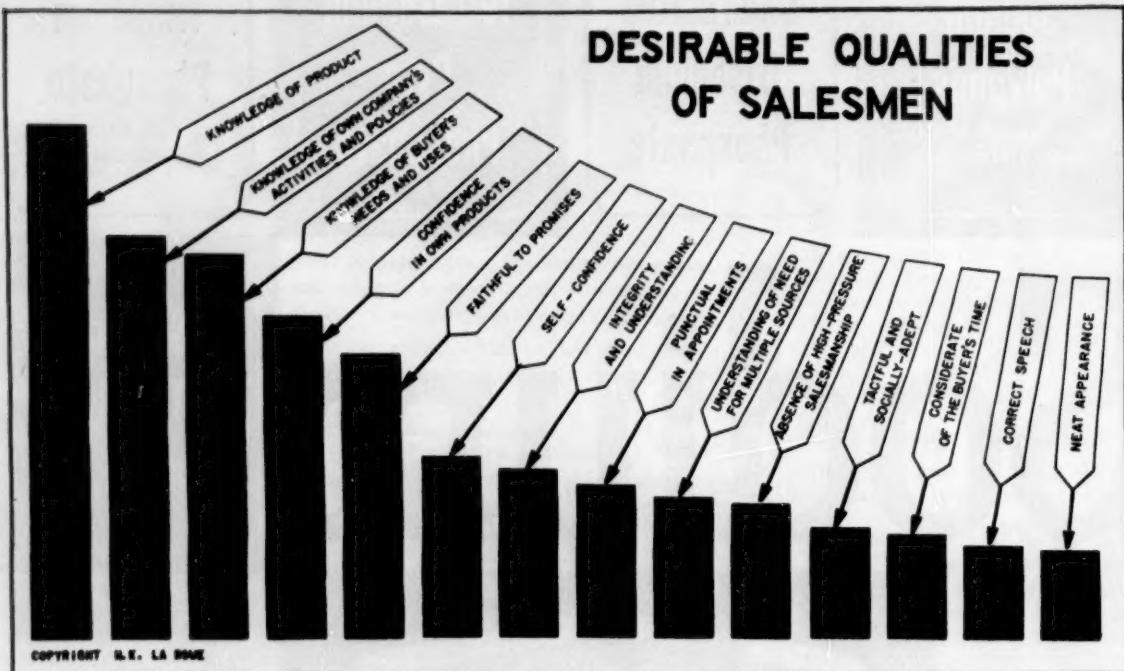
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SODIUM FLUORIDE
**HYGRADE
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DISTRIBUTION . . .



LINE-UP FOR SUCCESS: Cyanamid's buying team sizes up salesmen against this backdrop, spotlights the . . .

Key to More Sales: Cooperation

The customer's point of view is essential to any discussion of sales—particularly under present conditions.

Harboring that belief, Eastman Chemical Products, Inc. a few days ago invited one of the chemical industry's well-known purchasing men, American Cyanamid's George Polzer, to give Eastman salesmen the picture from the other side of the purchasing desk.

As the choice to cue salesmen on how best to approach and service an account, Polzer is doubly qualified:

- He is Cyanamid's general purchasing agent for chemicals.
- His company has devoted an uncommon amount of time and thought to buyer-seller relations.

Target Sighting: The salesman's best approach to building a fruitful relationship between himself and the purchasing agent, according to Polzer, is to learn all he can about the purchaser's objectives.

"The salesman should remember," Polzer explains, "the conscientious purchasing agent has no alternative but to spend his company's purchasing dollars as wisely as possible. And while he does not intend to use his position in this buyer's market to take

undue advantage of suppliers at whose hands he may have suffered during the past seller's heyday—today's purchasing agent means to do all possible to make today's competitive selling work to his company's best interest."

Of prime importance to the salesman's relations, Polzer emphasized, is the continuing job of keeping the purchaser informed. The salesman who can be counted on to notify the purchasing agent of any changes that may affect his company's operations is bound to receive respectful attention and, ultimately, more business.

Some of the areas of information especially vital to the purchasing agent: shifting market conditions, labor situations that may affect delivery, new techniques of handling and/or shipping.

Check Points: In discussing those qualities of a salesman most frequently lauded by purchasing men, Polzer bases his remarks in part upon a chart (*see cut*) compiled by his company under the supervision of his boss, Director of Purchases Harold La Rowe.

Top three "desirable qualities of salesmen" according to La Rowe's team:

- Knowledge of product.

- Knowledge of company's activities and policies.
- Knowledge of buyer's needs and uses.

Of the importance of a sales knowledge, details La Rowe:

"A salesman's know-how is made up of his educational background, his knowledge acquired in training, his experience factor, or in other words, the sum total of all the knowledge he has gained of his company's products, methods of operation, including familiarity with policies and objectives. The buyer will most often seek the advice and counsel of such a salesman."

Next to knowledge, as far as the purchasing agent is concerned, most desirable sales qualities checked off are honesty and integrity. Expanding upon this point, La Rowe and Polzer have this to say:

"Among other things, we expect a salesman, in general,

- To present the product of his company honestly.
- To promise only performance that has been demonstrated can be lived up to.
- To sell without prejudice as to buyer and with equal fairness to all.

- To honor confidential information entrusted to him.
- To discourage any form of commercial bribery.
- To avoid sharp practice and to make available, courteously and promptly, technical and other advice that his company is uniquely in a position to offer within the limits set by management."

Weak Points: Cyanamid's purchasing staff view the period ahead as one requiring highly competitive selling. "In the near future," predicts La Rowe, we expect that sales efforts will be greatly intensified, well beyond the current status. For the salesman, it means it will be harder to get each purchase order and contract."

Due in part to the lush period past, actual performance by many salesmen, in Polzer's and La Rowe's opinion, has been below par.

One weak point, easily correctable: making appointments. According to Cyanamid's figures, only 10% of the salesmen make appointments, though observance of this practice could increase selling time, make for better scheduling and analysis of sales calls.

Some other weak points listed:

- Ineffective use of advertising and sales promotion programs to keep the costs of selling calls in line.
- Lack of training to meet competitive selling as against order-taking in the recent past.
- Sales specialists' insufficiently broad knowledge of other segments of their organizations.
- Reluctance to offer substitute or alternate materials. Since savings have sometimes been made by purchasing men through the use of legitimate substitutes, a salesman with savings suggestions is always welcome.
- Infrequent calls. Many firms do not require their representatives to call even twice a year. Concerning this, says La Rowe:

"We think that is a decided mistake. In the first place, the smaller and medium-size organizations are calling very frequently—at least once a month and sometimes twice a month and are really convincing buyers that they have products that are competitive and available."

How It's Done: As an example of how to meet competitive selling adequately, Cyanamid's purchasers made a study of how successful salesmen presented their material.

An analysis of order-producing tactics disclosed they worked because the salesmen:

- Had more facts than his competitors.
- Supplied a performance report

of results that "talked turkey."

- Made no claims that were extravagant or unproved.
- Showed possibilities of operating economies.
- Struck at the heart of an industrial problem.
- Talked in terms of the buyer's business and problems.

New Partnership? Taking to heart the advice Polzer gave them, his hearers probably came away with this conclusion:

On the road ahead, the successful salesman—in the eyes of the purchasing agent—will be the cooperator, the seller who is willing to team up with the buyer. This does not mean the

salesman is to be less aggressive; on the contrary, purchasers expect and welcome a stepped-up pace of progressive selling techniques.

And this same spirit was echoed recently by another chemical company leader: "Basic to any partnership is mutual confidence and trust between the partners.

"If each partner plays it close to the vest, lone-wolfs it, the enterprise will suffer. The sales-purchasing partnership is no exception."

Shipping Show

Chemical transportation, packaging and labeling will come in for all-day discussion at Chicago, Oct. 13. As part



Honors for Applications

ARMOUR carried off the laurels last fortnight in the 1954 ad-program contest of the National Industrial Advertising Assn. in Montreal.

Declared a champion in the "suggest new applications" category: the fatty-acid merchandising setup of Armour's chemical division. Here's the program that won for Armour the NIAA "Topper":

• Goals. The ad syllabus was patterned to hike sales by plugging known uses of current products and to uncover and develop potential applications for Armour's line of fatty acids and derivatives. Another objective: a probe of possible markets for new fatty acids and related products.

• Method. Advertising was

placed in several chemical journals, the text tailored to fit the particular audience of each magazine. And, to make certain no prospective purchaser was left uncrossed, ads were mailed to "selected" people. All inquiries for literature were evaluated and referred to the company's salesmen.

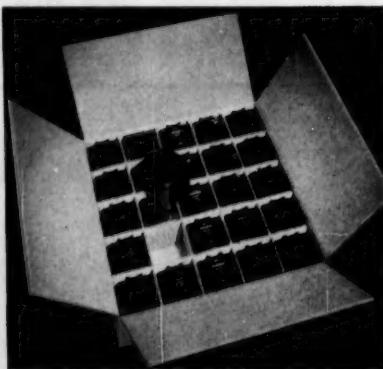
Armour's campaign to sell its chemicals seems to be effective. Say company spokesmen:

- Requests for samples or literature have risen steadily.
- Some of the firm's best accounts came from its advertising efforts.

* John Giroux, Armour advertising department (center), Stuart Doyle (right, seated), account executive for the Foote, Cone, & Belding agency, and other FCB personnel, chat about '55 plans.



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DISTRIBUTION . . .

of the four-day Eighth National Chemical Exposition, Oct. 12-15, the Manufacturing Chemists' Assn. has arranged a symposium covering four major topics:

- John Keeler, Koppers Co., Inc., and Donald Ward Mathieson Chemical Corp., will discuss "The Economics of Chemical Transportation," bearing upon the broad effect of transportation economics on the chemical industry—including rate structures, plant locations, population shifts.

- A three-part panel will be concerned with "Bulk Transportation of Chemicals." T. H. Caldwell, Dow Chemical Co., will discuss tank cars; W. E. Morgan, Union Carbide and Carbon, tank motor vehicles; and Frank Moore, Columbia-Southern Chemical, tank vessels and barges.

- R. D. Minteer, Monsanto Chemical Co., will open the afternoon session with a paper on "The Precautionary Labeling of Hazardous Materials."

- A panel discussion on "The Smaller Bulk Containers" will conclude the program. Speakers and their topics: R. H. Long, Harshaw Chemical Co., metal drums and cylinders; L. B. Keplinger, Steel Shipping Container Institute, lining developments; Carl Pruet, Du Pont Ltd., plastic containers; H. W. Hamilton, Chemical Specialty Manufacturers' Assn., aerosols; G. W. Benbury, Pennsylvania Salt Manufacturing Co., fiber containers.

Barge Use Upswing: Water shipments of chemicals on navigable canals and rivers are spurring upward. According to the American Waterways Operators, the Mississippi River alone is expected to soon move over 3 million tons of material annually. Biggest chemical shippers: chemical specialties, sulfur, and sulfuric acid.

Drug Plaudit: "For its pioneering use of TV in bettering the health of the nation," Smith, Kline & French Laboratories was awarded last week the first "special citation" the American Medical Assn. ever gave a commercial sponsor of TV. Basis for the honor:

- Technical programs in color for the physician.

- Alerting the public to the part an M.D. plays in research and applied medicine.

The award was made at AMA's convention last week in San Francisco. SKF launched its color TV programs in 1949, capped it this year with a week-long presentation.

Sales Switches: Texas Plastic Develop-

(Advertisement)

CHEMICALS OUTLOOK

July 1954



LOWER SHIPPING COSTS PROMISED FOR MIDWEST CUSTOMERS

This news bulletin about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

A new shipping system on the Great Lakes, recently announced by Wyandotte, promises to improve transportation of bulk chemicals to detergent and glass manufacturers in Illinois, Indiana, Missouri and surrounding territories. The system will utilize a tug and self-unloading, converted ore carriers to transport soda ash, caustic soda, glycols and other Wyandotte products to Chicago, for transshipment to barges going south on the Illinois Waterway.

Shipping costs under this new system are comparable to the lowest competing means of transportation for bulk chemicals. Operation is expected to begin during the latter part of the present shipping season, and probably will be expanded during successive ones.

FACTS FOR FORMULATORS OF MECHANICAL DISHWASHING COMPOUNDS

The successful use of Pluronics* (Wyandotte's new series of 100% active nonionic surface-active agents) by formulators of mechanical-dishwashing compounds is due to a unique combination of four desirable properties: 1) an ability to eliminate staining and streaking caused by improper rinsing; 2) exceptionally low foam level; 3) better, more permanent dedusting effect than other surface-active agents; and, 4) no increase in the hygroscopicity of the compound.

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This combination of vital properties cannot be duplicated in any other single nonionic surfactant. The over-all balance of the Pluronics makes them the most versatile agents of their type available today. Samples, data sheets and other technical and price information can be obtained from Wyandotte, or through our local representatives.

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Wyandotte CHEMICALS

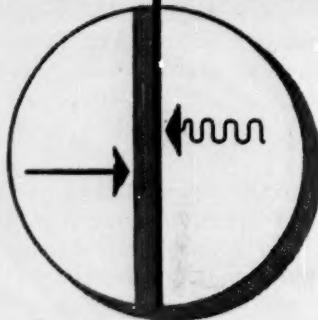
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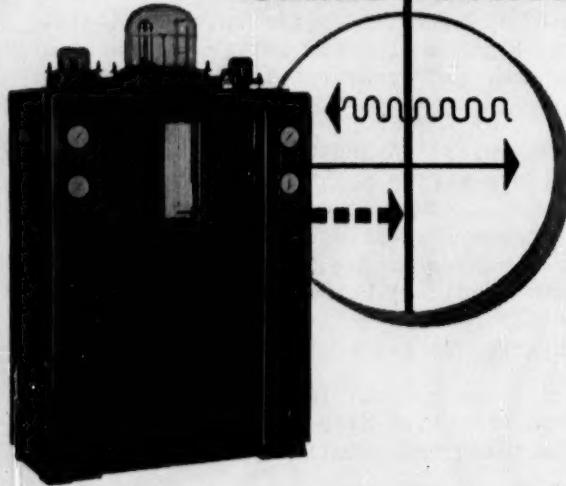
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Whether you heat or cool water for make-up, process or any other use, you will need Wallace & Tiernan Chlorination to help combat slime problems introduced by water-borne bacteria or air-borne bacteria.

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• PRECISION PRESSURE INSTRUMENTS • CATHODIC PROTECTION • FINE CHEMICALS

CD-39

opment Corp. a plastics specialties firm, has appointed sales and service representatives for nine areas of the U.S.

- Pittsburgh Coke and Chemical Co. has opened a new divisional sales office in Dallas for its protective coatings division.

- Davison Chemical Co., division of W. R. Grace & Co., is extending sales and service facilities in the Southwest and along the Gulf Coast. Location of new sales offices: Houston.

Warehousing: General Tire & Rubber Co.'s Textileather Div. has opened a new warehouse for its products in Toledo, O.

- Mobile Paint Manufacturing Co. is planning a \$104,000 warehouse and office building to serve the Jacksonville, Fla., area.

- Wilson and Toomer Fertilizer Co. is erecting a \$50,000 warehouse in Jacksonville, Fla.

- Redstone Arsenal, Huntsville, Ala., is expanding storage space for its guided missile propellants. Planned are some six sheds to be fabricated from structural steel frames and corrugated steel siding. Estimated cost is placed at \$681,000.

For reference files: Technical brochure design gets a novel twist in Monsanto's current acrylonitrile bulletin. Presented in 34 x 44-in. wall chart form in lieu of conventional booklets, the "bulletin" flow-sheets reactions of acrylonitrile and suggests uses.

- "Vinsol" resin, a brochure providing technical data and suggested uses in adhesive formulations. Hercules Powder Co., Wilmington, Del.

- "Indolin" lignin, a rubber reinforcing agent (CW, June 26, p. 62). Technical bulletin outlining data and uses. West Virginia Pulp and Paper Co., Charleston, S. C.

- Aliphatic fine chemicals, a technical brochure summarizing data and applications. Humphrey - Wilkinson, Inc., North Haven, Conn.

- Nonyl Phenol, a data sheet listing physical constants and potential applications. Jefferson Chemical Co., Inc., New York.

- Mann Research Laboratories, New York, has issued a new listing of its biologicals and fine chemicals. Ten amino acids are among the 160 new products added to the firm's stocks.

- "Standards for the Construction and Protection of Piers and Wharves," a booklet, is now being distributed by the National Fire Protection Assn., Boston. The standards, according to

Now and for the future



your best source for all types of

ETHYL ALCOHOL

SERVICE: CSC's position as a leading manufacturer and supplier of industrial alcohols has been strengthened by the establishment of new sources for this vital chemical for industry. CSC Ethyl Alcohol of unsurpassed quality is available in every type for every use, in every formulation—tax-paid and tax-free.

DISTRIBUTION: Through its expanding network of denaturing plants, sales offices, and distribution points, CSC is setting new standards of dependability of deliveries in every quantity—tank-car, tank-truck, compartment tank-car, drums or smaller quantities.

QUALITY: Commercial Solvents Corporation's pioneering history in alcohol research and production extends back more than a century to the Rossville distilleries built in 1847 on the banks of the Ohio in Indiana. This past experience plus careful quality control provide your assurance of a product that meets the most exacting specifications in industry.



COMMERCIAL SOLVENTS
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NEW YORK, N.Y.



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They stick with ARCCO Adhesives

Yes, take a good look — they are all around you — resin adhesive bonding and laminating with ARCCO resin solutions, emulsions, or hot melts . . . Heat seal or cold set.

American Resinous Chemicals Corporation has developed resin solutions, emulsions, hot melt adhesives and coatings, specifically designed for many applications. In each case these adhesives must meet production line methods that turn out thousands and thousands of products at low cost. Furthermore they must work regardless of the type of equipment involved. The success of ARCCO adhesives and coatings in all cases is a tribute to their almost limitless versatility.

Remember, too, ARCCO can develop finished compounds for you which will also have the same success on all types of applications.

See what ARCCO adhesives or coatings can do for you . . . an ARCCO engineer will be glad to work with you. Write today!

ARWAX CONCENTRATES

These versatile hot melt combinations of synthetic polymers with paraffin and micro-crystalline waxes are constantly finding new uses among paper converters. Arwaxes upgrade paraffin waxes, improve moisture resistance — are non-blocking — and best of all, are economical in use. Write for data sheets C45 and C46.



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the NFPA, are a "guide to good practice" in pier and wharve fire protection. Also covered: water supplies for fire fighting, superstructures, and safety precautions for flammable cargoes.

- Petro AA, an alkyl, aryl sodium sulfonate surfactant—bulletin containing technical data and proposed applications. Petrochemicals Co., Long Beach, Calif.

- Catalog of organic, inorganic and biological chemicals. Amend Drug & Chemical Co., New York.

- Plastics, glass-reinforced storage tanks—a leaflet supplying technical information and illustrative applications. Plastic Products Corp., Tulsa, Okla.

- "Engineered Packaging"—a folder describing research, design, and testing of packaging. Webhart Corp., Pasadena, Calif.

- "Mylar polyester film"—new publication devoted to discussion of uses and providing technical data. Du Pont Co., Public Relations Dept., Wilmington, Del.

- Acetoacetarylamides — a leaflet containing physical data and suggested applications for five of the compounds. Union Carbide and Carbon Chemical Co., New York.

- "Ethanolamines: monoethanolamine, and triethanolamine"—handbook tabulating physical characteristics, chemical reactions, and applications. Dow Chemical Co., Midland, Mich.

- "Do It Yourself"—booklet providing complete directions for installing plastic wall tile. Monsanto Chemical Co., Plastics Div., Springfield, Mass.

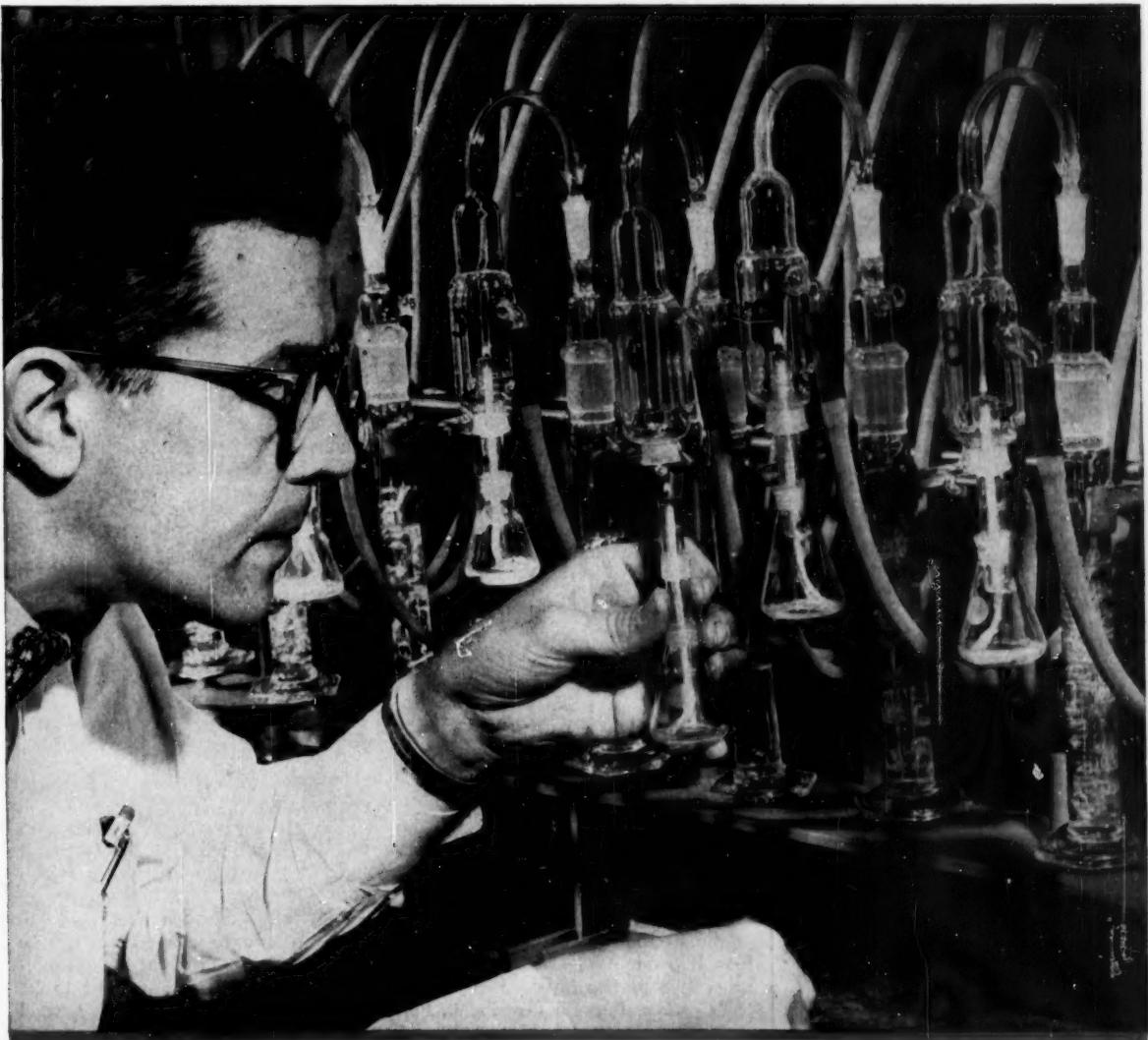
- "Space Wheel"—calculating device enables user to figure minimum aisle widths for maximum storage with use of fork-lift trucks. Lewis-Shepard Products, Inc., Watertown, Mass.

- "Methanol"—16-page booklet listing technical information and physical chemical data on methanol, ethanol, and isopropanol. Union Carbide and Carbon Corp., New York.

- Aerosol filling machinery—technical data sheet describing a fully automatic aerosol filling machine. Bass and Co., New York.

- Continuous peroxide bleaching equipment catalog—contains descriptive text and illustrations of various bleaching "ranges." Catalog No. 103, Rodney Hunt Machine Co., Orange, Mass.

- Vinyl "Polyclad" protective coatings—bulletin providing technical data on vinyl coatings. Carboline Co. Div., Mullins Non-Ferrous Steel Castings Corp., St. Louis.



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All Esso Petroleum Solvents are made under the most closely controlled modern refining methods. Backed by continuing research and testing, Esso Solvents are famous for their dependable high quality and performance.

6 good reasons why you can depend on Esso Petroleum Solvents

UNIFORMITY — made in modern refineries from carefully selected crude oil sources.

ECONOMY — there's a storage facility near you for low shipping costs and quick delivery.

CONTROLLED EVAPORATION — available in a wide range of evaporation rates with the precise characteristics to meet your needs.

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AVAILABILITY — with water terminals in industrial cities, Esso Solvents are always available in bulk.

MODERN HANDLING METHODS — separate tank storage, pumping lines, tank cars and trucks are used throughout all Esso Solvent handling operations.



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SPECIALTIES . . .



NATIONAL PETROLEUM NEWS
SPRAYING SERVICE: Formulators, fuel oil jobbers, homeowners—all benefit.

Solution for Summer Slack

What may turn out to be a profitable venture is a new type of marriage—one between fuel oil jobbers and fertilizer formulators. The objective: to utilize fuel tank trucks during summer months to spray liquid fertilizer on residential lawns and gardens.

While the formulators stand to benefit from the arrangement, the other two parties involved also have their own reasons for favoring it. For instance, it saves homeowners the physical effort that's expended when they undertake to do their own spraying.

And the oil jobbers are fond of the idea because it could be one solution of their perplexing problem: what to do with delivery trucks during the slack spring and summer. Already some 100 jobbers are reported by *National Petroleum News* to have nosed into the fertilizer trade.

Getting Started: Credit for launching the tank-trucks-for-fertilizer-spraying idea goes to Archer Smith, owner of Smith Equipment & Supply Co., Chicago, which sells a liquid fertilizer concentrate called Fertil-Ade. He got the notion last summer when he ordered a fill for his own fuel oil tank.

The driver happened to mention that it was the only fill he'd had in a week. This started Smith thinking. Why, he pondered, couldn't such trucks be used to merchandise his product to homeowners in a liquid form? Promptly, he set out to court

oil jobbers, to sell them his fertilizer concentrate.

First jobber to "buy" Smith's plan was the Fuel Oil Co., St. Louis. It sprayed its first lawn early this March and now has over 300 customers.

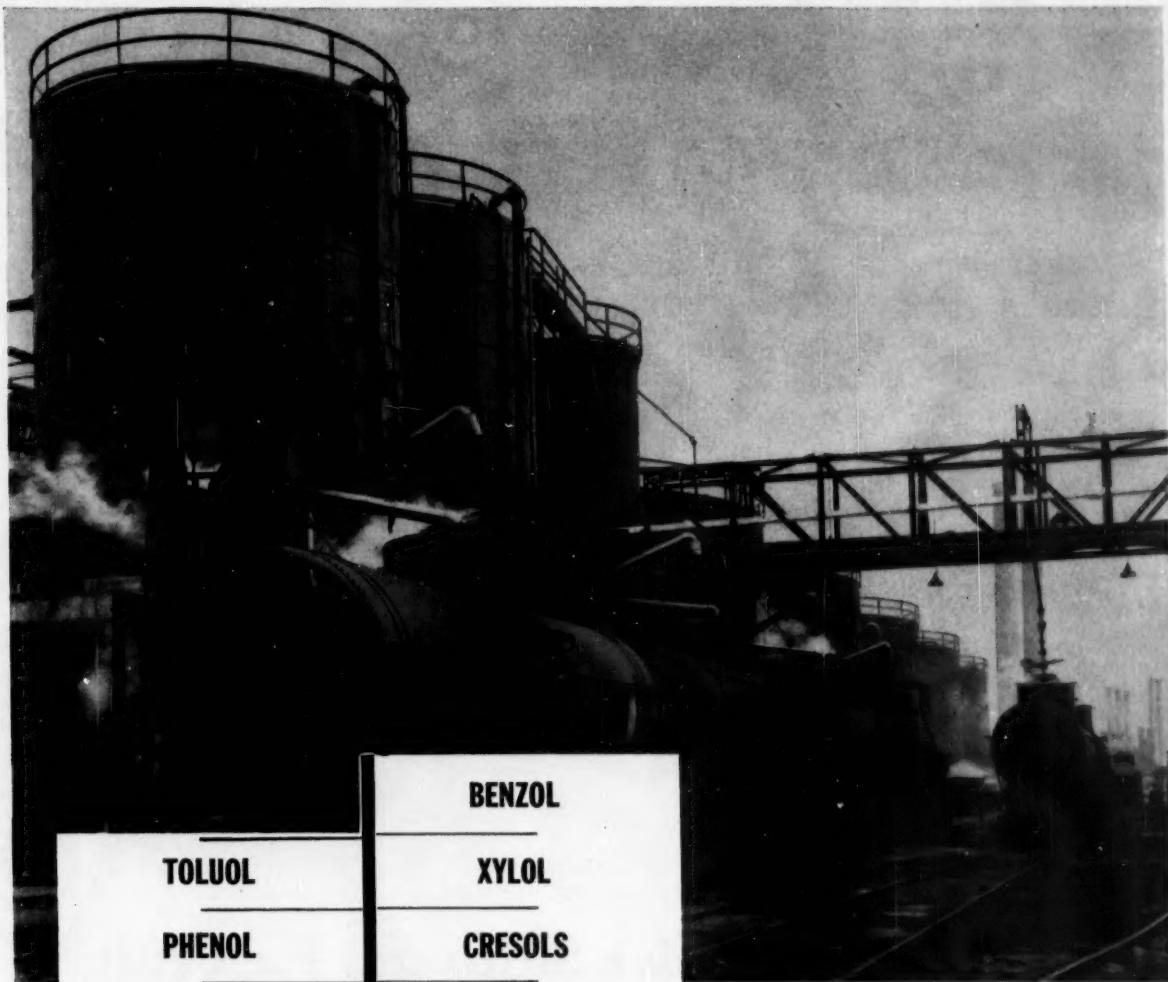
Convertible Trucks: Fuel Oil's initial step was to convert one of its trucks, at a cost of about \$400, to deliver the fertilizer. What had to be done: Each compartment was flushed out with water and synthetic detergent, then steam cleaned. Standard 1½-in. fuel oil hose was replaced with a ¾-in. heavy-duty, high-pressure water hose 350 ft. long. Fuel oil meter was removed. A water pump of 100 lbs. pressure and a spray nozzle were added. When the plan looked successful, Fuel Oil converted another truck.

The fertilizer mixture that Smith recommended for Fuel Oil is 10 gal. of his concentrate to 1,000 gal. water. (It has an analysis of 10% nitrogen, 8% available phosphoric acid, and 6% potash.) Smith's price to jobbers on bulk loads: \$1.75 gal., f. o. b. Chicago. (He's not alone in this setup now. Two other formulators are also supplying oil jobbers.)

One Truck, Twenty Lawns: The formulation worked out by Smith enables a 2,000-gal. truck to carry enough fertilizer for 80,000 sq. ft.—about 20 average lawns. Figuring conservatively on a load enough for 50,000 sq. ft., it's estimated that a truck should gross approximately \$100/day,

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PROMPT and EFFICIENT SERVICE on coal chemicals



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United States Steel has ten plants producing coal chemicals. When you order your chemicals from U. S. Steel, you are assured of service and shipment to meet your production needs. For more information, contact our nearest Coal Chemical Sales Office, or the United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa.

USS Coal Chemicals



4-1472

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as a
reducing
agent

Offers these advantages:

1. Original cost is lower than most commonly used agents.
2. Works in alkaline and acidic solutions of varying pH; also in aqueous and alcoholic solutions.
3. Yields a salable zinc by-product.
4. Effective in both organic and inorganic reactions.

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... is the country's largest producer of Zinc Dust, with plants at Trenton, N. J. and Sand Springs, Okla. We maintain extensive research facilities which permit us to give you active help on your particular problem. Our particle size control should allow us to fill your specific requirements.

Produced under rigid physical and chemical control, Federated Zinc Dust has 97.0% minimum metallic zinc content; iron content .01%, lead .20% maximum. It will all pass through a 100 mesh screen; 97.0+% through a 325 mesh screen.

Free Sample

You can have a free half-pint sample of Federated Zinc Dust for testing as a reducing agent. Just write on your company letterhead. Investigate it, too, as a catalyst and as a polymerizer.

FEDERATED METALS DIVISION

American Smelting and Refining Company
120 Broadway, New York 5, N.Y.

SPECIALTIES

and earn a net profit in the neighborhood of \$34.*

Things Learned: To introduce Fertil-Ade, Fuel Oil sent pamphlets to its fuel oil customers, and netted a response of 5%. Of the customers writing in, one half said they would like the service. One thing the company has learned in the meantime is that many householders who can afford to have their lawns sprayed don't respond to direct mail advertising. At present the firm is planning television commercials that will feature movies of actual spraying.

* Homeowners are charged around \$2.00/1,000 sq. ft. for lawns, a little more for gardens.

A policy the company has established is to have a salesman accompany the driver on the first call to a customer. Besides explaining details, the salesman urges the customer to sign a seasonal contract (usually for four to six applications). While the driver does the spraying, the salesman calls on the neighbors to sell the new service.

Though the business is new, there's already competition. Fuel Oil reports that in St. Louis, "some companies feed too lightly and charge less." A safe bet is that by next spring, there will be more companies and more competition in this unique kind of business.



HEADED FOR THE WASHER: To get better fruit to the market, o-phenylphenate.

Safer Shipping for Fruit

Things are looking up for fruit shippers. New antifungal formulations, built around sodium ortho-phenylphenate, give shippers hard hitting weapons against fungus-caused decay.

Latest development is the citrus treating method worked out by the Florida Citrus Commission's Edwin Hopkins and Kenneth Loucks. By combining sodium ortho-phenylphenate (which Dow Chemical Co. sells as Dowicide A) with hexamethylene tetramine (hexamine), these two plant physiologists have come up with what they regard as the best-yet process to protect oranges and lemons from decay in transit (*CW Target*, Aug. 8, '53).

The development follows closely on the use of the same chemical, in dif-

ferent concentration and combination, as a fungistat to protect apples—a technique widely used by growers in the Pacific Northwest.

Rot Beater: Here are the essentials of the Hopkins-Loucks process: Fruit is passed into a solution containing 2% Dowicide A, along with 1% Hexamine. A two-minute bath in this, followed by a plain water rinse, completes the job.

This is the sort of protection the treatment gives: decay cut to half or one third that of untreated fruit. One U.S. Dept. of Agriculture example: oranges, storage at 70 F for 10 days —treated, loss 5%; untreated, 15%. Some other tests showed up even better. Hopkins and Loucks, however, point out that their process is no cure-

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SPECIALTIES . . .

all that it could be improved upon.

The new treatment is the work of several years' testing. The hexamine permits use of a Dowicide concentration low enough to prevent chemical "peel burn," and to be relatively non-toxic to consumers. The process cost is low—"a few cents per box," and the Citrus Commission is permitting Florida growers to use it without licensing cost.

Apples, Too: Dow has a robust interest in apple protection, too. It's sodium ortho-phenylphenate is the key ingredient of Stop-Mold B, a fungicidal formulation made by Vis-Ko, Inc. (Sumner, Wash.) and distributed by Orchard Supply Distributing Co. (Wenatchee, Wash.) Last year Stop-Mold B was used on about 18-20 million boxes of apples and pears picked in the Northwest (of 28 million total), a 40% increase over the preceding season.

Vis-Ko remains rather silent on Stop-Mold B composition. It does say this much: the concentrate contains 43% sodium ortho-phenylphenate, "plus accessory solvent and other chemicals that act as a detergent and wetting agent and as a buffer against injury to treated fruits."

As in the case of citrus fruit, Stop-Mold B is applied in a washing machine, where the phenate is present in 0.4-0.6% concentrations. First unit of the washer sprays on the fungicide for about 20-30 seconds; second spray is a fresh water rinse.

Cost of the treatment is a cent or less per box (gallon of Stop-Mold B is about \$4). The treatment is FDA approved, doesn't affect flavor or odor of the fruit, and has no effect on the containers.

Opening: Ortho-phenylphenate has already captured a substantial market. For use on Pacific Northwest fruit alone, sales last year were about \$360,000 worth of Stop-Mold B. And should it prove out well on citrus, the potential will easily be multiplied—there are close to 140 million boxes of lemons and oranges shipped yearly.

Stop-Mold B isn't limited to fruit, either. It's makers see application to potatoes, and possibly even to cold storage warehouse and packing plant walls.

All these aspects are encouraging to the makers and sellers of fungists. They're encouraging to the fruit shippers, too, since there's less hand-wrapping of citrus fruit required, and there's less loss of damaged fruit. The combination seems to insure success for the fungicides.

No Ghost Mark: The Hemlock Paper

and Envelope Co. (Bayonne, N.J.) recently brought out a rag-content paper it claims is almost entirely erasable. An ordinary pencil eraser rubs out typing errors without leaving a ghost mark or scuff mark.

Triple Shot: Pro-K-Mycin, a combined penicillin and dihydrostreptomycin antibiotic has been marketed by American Cyanamid's Lederle Labs. division. It's recommended for treatment of mixed infections caused by gram-positive and gram-negative organisms.

For topical application, Lederle now has Achromycin Hydrochloride (tetracycline HCl) Crystalline Ointment. It contains 3% tetracycline hydrochloride in a petrolatum-wool fat base.

Lederle has also just marketed soluble tablets of Achromycin. These drugs are also effective against both gram-positive and gram-negative organisms.

Purchase: Bigelow-Sanford Carpet Co., Inc. recently purchased the assets of the LeConte Plastics Co., Inc. (Farmingdale, L.I.) to strengthen its interests in the reinforced plastics field. The firm says it plans to move the manufacturing facilities of the LeConte Co. to Bigelow-Sanford's plant in Amsterdam, N.Y.

Printed Word: Bakelite has published a new brochure on its phenolic resin spheres. Microballoons, which are used to reduce evaporation of crude oil in cone-roof tanks. The Microballoons are small (0.0002 to 0.0036 in. in diameter), hollow grains, filled with nitrogen gas. They float on top of liquids, act as a mobile roof.

• Alfred Hague & Co. (Brooklyn, N.Y.), manufacturers of rubber-base paints, has issued a new technical bulletin (#101) on its Rubalt PE-16 clear chlorinated rubber coatings.

Glass-Filled Melamine: American Cyanamid Co.'s Plastics and Resins Div. is currently selling a glass-filled, electrical-grade melamine molding material, Melmac 3135.

Propellant Carrier: The Alpha Corp. (Greenwich, Conn.) has brought out a carrier blended specifically for applying a controlled flow of molybdenum disulfide to metal surfaces by spraying from a self-pressurized, aerosol-type container. The product, Moly-Spray-Kote, is nonflammable, noncorrosive, does not contain a resin binder, may be sprayed on hot surfaces, the maker claims.

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SPECIALTIES . . .

Jet Proof

Newest joint sealing compound—for caulking the cracks between concrete paving slabs—designed to withstand jet engine fuels and exhaust blasts is Posselit, a German invention.

The problem has become acute in recent years with the emphasis on jet aircraft in military service, (CW Target, Feb. 21, '53), and jet transports now under test. Ordinary bituminous fillers melt, soften, and don't do the job of sealing they were supposed to do.

Posselit, now being made in Germany, and imported here, is claimed to do a permanent job of caulking, and to be a tough concrete adhesive as well. German patents are pending, so details on Posselit manufacture are scanty.

In physical appearance, however, the new compound resembles ordinary sealers. It's black, has a pitchlike odor. It must be carefully heated to 160 to 180 C before application; after it has set, it is resistant to high temperatures, won't crack at sub-zero temperatures, is weather-resistant. It's also claimed to be acid-and alkali-resistant.

Until duty on the product has been set, the importers, World Marketing Service (New York), can only suggest a basic price—24¢/lb., which does not include duty.

In addition to the airfield-grade sealer, which has been tested by Britain's RAF in Germany, World Marketing offers other grades of Posselit, suggests them for use as sealers for swimming pools, similar applications.

Something New: Among a number of new products available to manufacturers.

- Givaudan-Delawanna, Inc. (New York) has a new sun-screening agent called Giv-Tan. It's said to be effective at levels as low as 0.5%, and capable of blocking out light waves in the 2,900 to 3,150 Angstrom units area.

- Crownoil Chemical Co. (Long Island City, N.Y.) has a new polyvinyl acetate polymer, Polycrown AX, for latex paints. It is 55% solids.

- A new titanium frit for porcelain enamel specifically designed for coatings used in appliance manufacture, and available in colors becoming increasingly popular as appliances coatings, is sold by Ferro Corp. (Cleveland). Product is tagged 1700 Frit.

- For housepaint makers, Sherwin-Williams Co.'s (New York, Chicago) Pigment, Color and Chemical Div. is

• Davison Bulletin •

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SPECIALTIES . . .

making a new leaded zinc oxide pigment, called Ozlo 18M. It is composed of 82% zinc oxide and 18% monobasic lead sulfate. S-W claims 4 lbs. of Ozlo 18M can replace 5 lbs. of ordinary leaded zinc oxide, resulting in a 10-15¢ saving per gallon of paint.

- For commercial laundries, Neirad Industries, Inc. (Darien, Conn.) has introduced a novel agent for treating dynel work clothes. Tradenamed Neiradex No. 1, the aluminum acetate compound is applied to the dynel in the wash wheel. It is said to make the dynel resistant to acids and alkalies, must be renewed with each laundering.

Protective Coat: Magic Chemical Co. (Brockton, Mass.) is selling a one-solution neoprene paint, Magic-Vulc Neoprene Maintenance Coating No. 245-B. The paint, brush- or spray-applied, dries in about two hours, is available in black, aluminum and other colors.

- For dry, lubricating coatings, Acheson Colloids Co. (Port Huron, Mich.) is now selling "dag" Dispersion No. 213 (with colloidal graphite) and "dag" Dispersion No. 223 (with colloidal molybdenum disulfide). Films are said to show good wear resistance and adhesion, to be unaffected by oils and solvents, and usable in temperatures up to 500 F.

- To give enamel paints better alkali resistance, improve gloss of lacquers, and boost qualities of other finishes, Howards & Sons (Canada) Ltd. (Montreal) is now selling its cyclic ketone condensation resin called Resin MS2.

- Makers of inflatable toys and other vinyl products can use Monsanto's latest film formulation, Ultron R-127, said to have good heat-sealing properties.

- Strip-Kote is a peelable protective coating developed by Adhesive Products Corp. (New York) for protecting polished surfaces during fabrication.

- F. H. Wiessner Co. (Burlington, Vt.) is now making a special tool for sealing standard quart and gallon friction-top containers. The aluminum tool, designed for small-scale closing of metal cans, sells for \$16.50/quart size, \$21.50/gallon size.

Phosphatizer: Ty-Bond, a new zinc phosphate coating for metals, has been introduced by Cowles Chemical Co. (Cleveland). The new coating is amorphous (uncrystallized), Cowles says, and is the first new development in zinc phosphate coatings in 20 years. Advantages claimed over crystalline

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Gone Commercial: Du Pont's new alkali-soluble vinyl acetate copolymer, Elvadex vinyl polymer, is now being sold in commercial quantities. It has found principal acceptance to date as an off-loom finish and as a sizing in the textile industry.

Weather Worn: How weather affects styrene and phenolic plastic materials has been probed by a group of Monsanto Chemical Co. researchers. Over a period of four years, plastic materials were exposed to ultraviolet radiation, humidity, rain and dust erosion, and temperature variations at outdoor locations in Phoenix, Ariz., Fort Lauderdale, Fla., and Springfield, Mass.

Some of the conclusions: with styrene, degradation is closely related to amount of sunlight—crystal styrene was seriously degraded in mechanical and electrical properties within three months in strong sunlight. Addition of pigment greatly improves its durability; after four years, pigmented (gray) styrene showed little change in properties other than surface roughening.

Phenolic compounds (black, pigmented, wood flour-filled) are degraded mechanically and electrically by semitropical weather; in hot, dry climates, the plastic shows little or no change in strength or electrical properties.

Full report on the test, presented to the American Society of Mechanical Engineers's Pittsburgh meeting, may be obtained from the ASME, 29 W. 39th St., New York 18. Paper, No. 54-SA-68, costs 50¢.

Flap Seal: Irvington Varnish & Insulator Div., Minnesota Mining and Mfg. Co., is now making a sealing compound for the Boeing Stratojet aileron flap. Irv-O-lon, the new coating, is made from General Electric Co.'s SE-76 silicone gum.

Surface Readier: Rust-Oleum Corp. (Evanston, Ill.) has just marketed a special liquid etching compound for preparing concrete surfaces for sealing and refinishing. Now product is dubbed Rust-Oleum Surfa-Etch.

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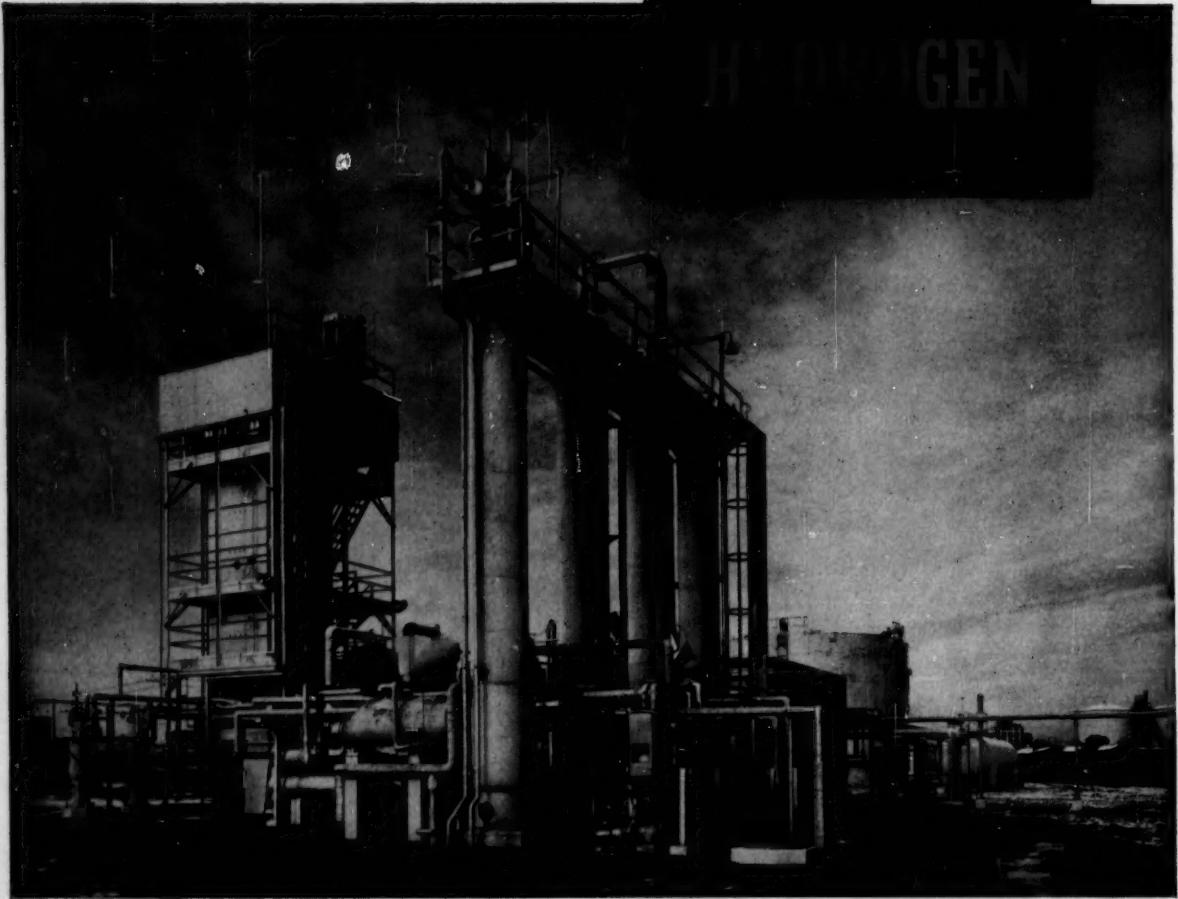


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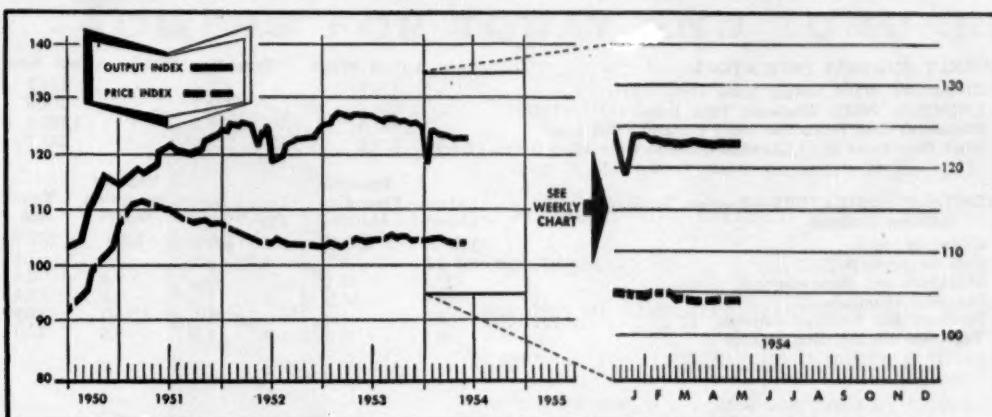
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MARKETS . . .



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries
CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

MARKET LETTER

The nation's chemical markets, normally quiet during July and August, will bring sluggish, conservative chemical buying over the next few weeks. The scattered prices on the upside will about balance those on the downside.

On the downward side:

- Acetone is again beset by an impending and imposing gallongage of by-product from cumene process phenol. A few marketers this week have shaded tank car acetone prices below 8¢/lb. in at least two areas: the Middle East and New England.
- Hydrogen peroxide is another on the lower price list. Buffalo Electro-Chemical trimmed prices about 6% this past week—first price reduction in over a decade. It applies to 27.5%, 35%, 50%, and 90% concentrations.

By this week, a second maker, Du Pont, is notifying its customers of a somewhat parallel series of hydrogen peroxide price cuts.

Not so plentiful right now is European citric acid. Reason: certain European producers are plagued with fermentation process troubles.

Several continental buyers are bidding busily for U. S. acid. (One prominent exporter admits his orders for citric acid are 50% higher than last year's). And with demand also brisk in Latin America and Egypt there's a hunt for citric to keep up with foreign soft drink demand. (CW, June 26, p. 95).

To add to the scramble, current but unconfirmed reports have it that the Soviet bloc is bidding for citric from shortage-wracked European sources.

The use of animal fat preservatives now has new curbs as amendments to the Dept. of Agriculture's Meat Inspection Regulations took effect this past week. Amount of any one preservative (or anti-oxidant) is limited to 0.01% of the fat. Total preservative content shall not exceed 0.02%. Citric acid, phosphoric acid, or monoisopropyl citrate, or com-

MARKET LETTER

WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	123.7	123.6	124.2
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.2	104.2	104.6
Bituminous Coal Production (daily average, 1,000 tons)	1,447.0	1,325.0	1,763.0
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.)	319.8	307.2	243.7

MONTHLY INDICATORS—Foreign Trade (Million Dollars)

	Exports Latest Month	Exports Preceding Month	Imports Year Ago Month	Imports Preceding Month	Imports Year Ago
Chemicals, total	\$103.2	\$66.6	\$68.5 \$26.8	\$26.1	\$32.9
Coal-tar products	8.8	4.7	4.9 3.3	1.9	2.9
Medicinals and pharmaceuticals	27.2	16.1	18.1 0.7	0.6	0.4
Industrial chemicals	14.1	10.5	9.1 5.3	4.3	7.4
Fertilizer and fertilizer materials	4.2	4.9	3.3 15.1	16.0	18.9
Vegetable oils and fats, inedible	5.3	10.2	1.7 8.0	4.6	11.0

binations, may be used with the preservative. A newcomer to the list of approved preservatives is butylated hydroxytoluene (CW, Jan. 23, p. 95).

There's more competition looming in methyl and ethyl acrylates. This week Carbide and Carbon at Institute (W. Va.) is getting ready to launch commercial output. It will have to vie with entrenched Rohm & Haas' acrylate monomer output from the latter's Deer Park (Tex.) plant. (CW, Jan. 31, '53).

On the upward side: Although the U. S. is already paying higher prices for its tin and its salts as a result of the International Tin Agreement now up for ratification, it's too early yet to predict with certainty what long-term effect the pact will have on prices.

Fourteen tin-consuming countries have signed—the U. S., West Germany, and Switzerland have not. (All six of the major producing countries did.) Expectation: ratification by the governments of the 14 signatories will be forthcoming. The agreement provides for a buffer stock of tin administered by an International Tin Council. This tin will be released when prices reach a certain ceiling, bought back when they hit an agreed minimum. It's believed the floor will be \$1,792 and the ceiling \$2,464.

The U. S. State Dept. takes a position of "benevolent neutrality" on the agreement, but the Dept. of Commerce considers it a tin cartel, prefers a free world market.

One solid probability: if prices continue to go up, this trend will be accelerated: substitution of other, less expensive metals or resins for tin. (For more on tin see p. 72.)

A would-be di-isocyanate producer is this week still sizing up plant site possibilities. The company: Mobay Chemical Corp. (St. Louis), owned jointly by Monsanto and Bayer of Leverkusen, Germany. Unofficial estimate of minimum size for economical operation: 300 tons/month capacity.

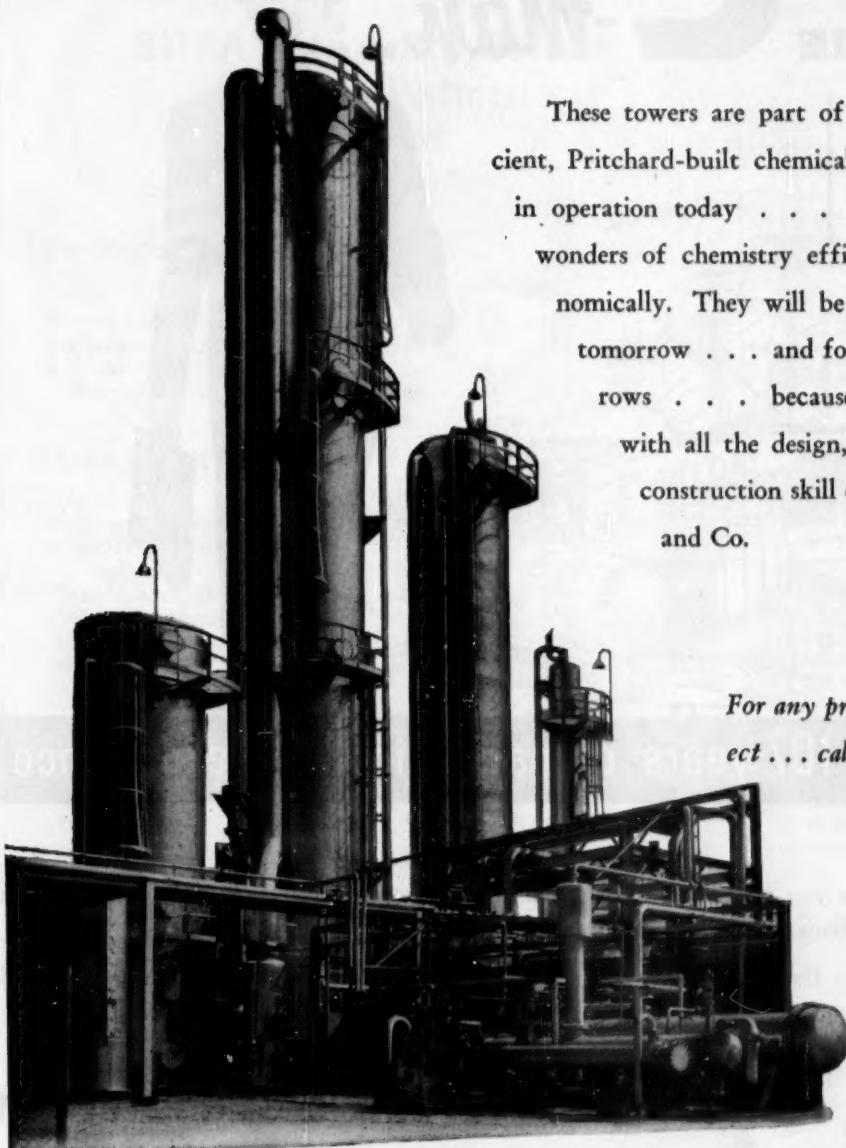
SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending July 6, 1954

DOWN —

	Change	New Price		Change	New Price
Ethyl silicate, condensed, tank cars E., frt. alld.	\$.065	\$.375			
Ethyl silicate, 40 pcts, SiO ₂ tank cars E., frt. alld.	.025	.500	Tetraethylorthosilicate, dms., c.l., E., frt. alld.	.020	.640

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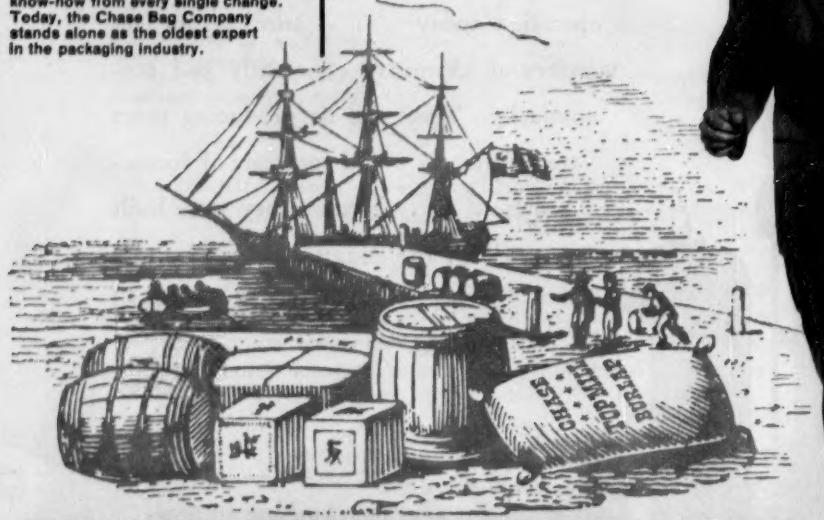
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BDSA Elemental Sulfur End Use Pattern 1950-1952

(Thousands of Long Tons)

How Much Was Available:

	1950	1951	1952
Native sulfur output ⁽²⁾	5,193	5,280	5,295
Recovered sulfur ⁽²⁾	142	184	251
Imports ⁽³⁾	...	2	5
Supply—Total	5,335	5,466	5,551

Where It Was Used:

Sulfuric acid	3,077	3,074	2,925
Pulp and paper	418	391	371
Agricultural (ground crude, refined) ⁽⁵⁾	274	248	198
Carbon bisulfide	183	214	186
Other chemicals and dyes	94	103	92
Rubber	46	42	39
Misc.	44	40	28
Domestic consumption—Total	4,136	4,112	3,839
Exports (crude sulfur only) ⁽³⁾	1,441	1,283	1,304
Estimated consumption—Total ⁽⁴⁾	5,577	5,395	5,143
End-Of-Year Stocks ⁽¹⁾	3,143 ⁽⁶⁾	3,341	3,665

(1) Producers' stocks are from the Bureau of Mines, U.S. Dept. of Interior. Consumers' stocks were derived from reports to the National Production Authority on Forms NPAF-98, 157, 158.

(2) Data are from the annual "Mineral Market Report" of the Bureau of Mines.

(3) As reported by the Bureau of the Census, U.S. Dept. of Commerce; 1950 imports amounted to less than 30 long tons.

(4) Based on consumers' reports on

Forms NPAF-98, 157, 158. Consumers of less than 20 short tons/month were not required to report. It is estimated, however, that more than 98% of consumption has been herein covered.

(5) Excludes industrial uses but includes exports of ground crude and refined sulfur.

(6) Does not include producers' recovered sulfur stocks since data were not available for 1950. They probably amounted to less than 100,000 long tons.

"normal" year than the shortage-wracked period covered in the 1½-year-old figures.

Then, too, BDSA concentrated on elemental sulfur—skipping over production and consumption of other sulfur-containing raw materials (e.g., pyrites, by-product sulfuric acid, other sulfur compounds)—thus made the newest study somewhat less informative than the annual Mineral Market Reports from the Bureau of Mines, and certainly less helpful than many output-use breakdowns worked out by industry itself.

But despite its shortcomings, the BDSA report does give officially detailed evidence of the consumption clampdown on domestic outlets and the increase in shipments to "friendly countries" in the last months of the Korean War.

The successive yearly declines in sulfur use in the U.S. since 1952 (*see table*) summon a few flashback scenes. After the outbreak of hostilities in mid-1950 the demand for elemental sulfur—as for most other chemicals—surged upward.

Zooming requirements, both domestic and foreign, had U.S. producers digging into sulfur stockpiles to fill orders, but it soon became clear that sulfur reserves and output would fall short of satisfying all export and U.S. customers' needs.

At the beginning of 1951, the government whipped up an export allocation program, earmarking sulfur and directing producers to ship specific tonnages for overseas consumption. The system resulted in a small reduction in exports but had the effect of maintaining such shipments at a high rate compared with those of the previous decade.

Later that year, domestic sulfur use was limited, by government controls, to 100% of the amount used in 1950. Because of the stockpile withdrawals in that year, though, 1951 production was not quite high enough to permit the 100%-of-1950 level. Producers, therefore, had to continue their own individual allocation systems, which had been instituted earlier.

The following year, 1952, the government restricted further the use of sulfur, holding consumption to a basis of 90% of the '50 use. (A policy of maintaining then-existing stockpiles was also adopted.)

The new order made it possible to support military and defense requirements for sulfur. Thus, as BDSA's pattern indicates, total domestic consumption, because of controls as well as oil and steel strikes and later downslide in business conditions, was

Sulfur Rundown

Whether the majority of sulfur producers and consumers will greet the latest Dept. of Commerce chemical distribution study—this one on sulfur—with very much enthusiasm is a question.

This latest report,^{*} just prepared by the Chemical and Rubber Division, Business & Defense Services Admin-

istration, is the fourth since late Dec., '53.

It shows that U.S. consumption of elemental sulfur continued to ease off in 1952, dipping some 273,000 long tons from the previous year's 4.1 million tons. Total supply and exports, however, were up—85,000 and 21,000 tons, respectively.

Most sulfur marketers, of course, will wish that the pattern included salient facts concerning 1953, a more

* First was benzene (*CW*, Jan. 2 p. 45); second covered sulfuric acid (*CW*, Feb. 27 p. 84); third, toluene (*CW*, April 24 p. 98).

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M A R K E T S

pressured down to a near-4-million-ton rate by 1952. Conversion of elemental sulfur into acid was pinched some 149,000 tons from the 1951 quantity; pulp and paper was cut about 20,000 tons; other nonacid outlets suffered in like fashion.

A Look Beyond: Had the Commerce Dept. agency carried the study a year farther, the elemental sulfur picture would have appeared in quite a different light. By 1953 supply was again sufficient to meet all demands; government controls on consumption had been scrapped. Most sulfur outlets increased their use of sulfur last year with perhaps one exception: agricultural demand for crude and refined may be down slightly because of the weakness in pesticides demand.

Here's a studied estimate—using similar-to-BDSA headings—of how a 1953 breakdown column might shape up:

Elemental Sulfur Use 1953 (est.)	(thousands of long tons)
Sulfuric acid	3,255
Pulp and paper	380
Agricultural (ground crude, refined)	196
Carbon bisulfide	206
Other chemicals, dyes	97
Rubber	43
Misc.	32
Exports (crude only)	1,241
Total	<hr/> <hr/> 5,450



CHEMICAL HAULER: Some 47 million tons of chemicals roll on rails.

Rail Chemicals on Top

DESPITE the upcoming St. Lawrence Seaway (CW, May 22, p. 74) and the signing of new barge contracts (CW, March 13, Newsletter), which may well indicate a trend toward water hauling of chemicals, railroads are not going to be counted out for top position in domestic chemical product shipments.

Not so long ago, for instance, the Assn. of American Railroads underlined steel rails' hold on the market, pointed out that some 47 million tons of chemicals and chemical products rolled last year.

The association classifies its '53 chemical loadings this way:

	Millions of Tons
Fertilizers	12.0
Sodium (soda) products	9.5
Ammunitions and explosives	4.9
Sulfur	4.5
Sulfuric acid	3.4
Other chemicals	9.8
Miscellaneous	2.9
Total:	<hr/> <hr/> 47.0

In the miscellaneous tonnage are acids, insecticides and fungicides, tanning materials, plastics, cellulose articles, soap and washing compounds, drugs, medicines, and toilet preparations.

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M A R K E T S

From RFC to FFC

Management of the government-owned Texas City (Tex.) tin smelter—the only one in the U.S.—now is in the hands of a new agency, the Federal Facilities Corp., directed by the Secretary of the Treasury, George Humphrey.

This change comes as the Reconstruction Finance Corp. comes under supervision of Treasury.

The smelter, with at least another year of life granted by Congress, will continue to turn out primary tin at a rate of approximately 35,000 long tons/year. (Output the first five months of this year amounted to 14,377 long tons.) And past years' total production was at a similar rate—except for 1952 when a three-month strike bit into production:

Texas City Output (thousands of long tons)	
1949	36.1
1950	32.1
1951	30.9
1952	22.5
1953	37.7

A look at the total U.S. tin consumption for a comparable period shows how the Texas City plant figures fit into the nation's economy:

Total Tin Consumed
in U.S. Manufacturing*
(thousands of long tons)

	Total	Primary	Secondary
1953**	83.6†	54.0	29.6
1952	78.4	45.3	33.1
1951	88.2	56.9	31.3
1950	104.5	71.2	33.3
1949	72.4	47.2	25.2

It's the tin concentrates (see below), however, that goes to the Texas City plant. In the period March 12, '51, through July 31, '52, the RFC was the only U.S. importer of tin. At that time the RFC cut back imports; that accounts for the dip in imports in the totals below:

U.S. Tin Imports
(thousands of tons)

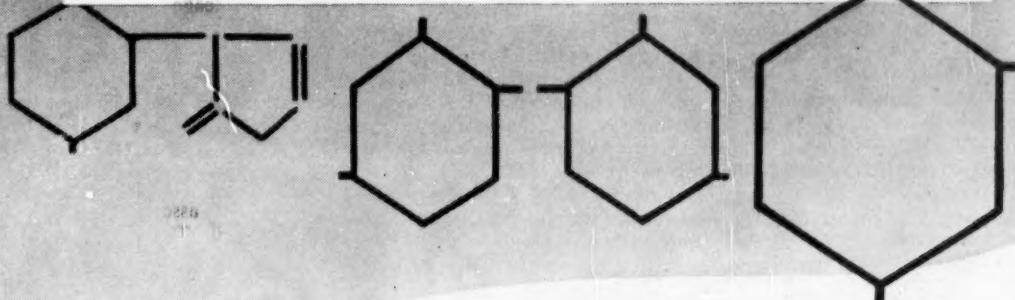
	Refined	Concentrates
1949	60.2	38.3
1950	82.8	26.0
1951	27.8	29.4
1952	80.5	26.5
1953	74.5	36.0

* Source: U. S. Bureau of Mines.

** Preliminary total.

† Total for 1953, but not for earlier years, includes plant losses not separately reported.

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RESEARCH . . .

Quiet Boom in Association Research

Although you don't see many statistics on the subject, trade association research should not be underplayed in the over-all industrial research scheme. Over the past few record-making years collective research of this kind has consistently kept pace with the growth of its better-publicized corporate counterparts. By this week, the nation's 12,000 industrial associations found themselves riding the crest of a new high in scientific activity.

According to Jay Judkins, chief of the U.S. Commerce Dept.'s trade association division, at least 800 national or regional associations carry on services that come under the heading of technical research, although not over 50 have significant laboratory facilities.

Spearheading this group are 100 chemical process associations. Of the 800, more than half (500) have com-

mittees to report upon and promote research in their industries relevant to new processes or products, new uses of present products, etc. About 300 have invested their association funds in scholarships, fellowships, research in outside laboratories. Of the 50 that own laboratories the chemical groups rate proportionally high.

But it's not expected that many more associations will acquire laboratories. The reason: increased reliance on nonprofit scientific research foundations like Stanford Research Institute, Armour Research Foundation and Mellon Institute (whose first trade association customer was the American Institute of Laundering).

Such foundations can carry on certain projects for as little as \$500/year; and the institutes have disinterested scientists (separated from production and marketing pressures), and facilities that are often better than the

trade group could afford on its own. These advantages are offset to a degree by some lack of understanding of the sponsoring industry's managerial problems.

Benefits accruing from trade association research often extend beyond the trade's specialized interests. During wartime, for example, associations have provided the government with valuable laboratory and consulting services, with no drain on the research potential of individual firms. In World War II, the National Canners Assn. did strategic work on substitute soldiers. In a less urgent way, the peacetime problem of developing a low-heat cement for use in the construction of Hoover Dam was solved through the cooperation of the Portland Cement Assn. (Chicago).

As might be expected from their varied interests, there's a big difference even among chemical associa-



On Top of the Pyramid

If AATCC President Robert Bonnar (*above*) were asked the secret of his association's success with research, he would probably point with pride to the people who give freely of their time and energy. But the way the association is organized

for research plays no small role in the effectiveness of its technical arm.

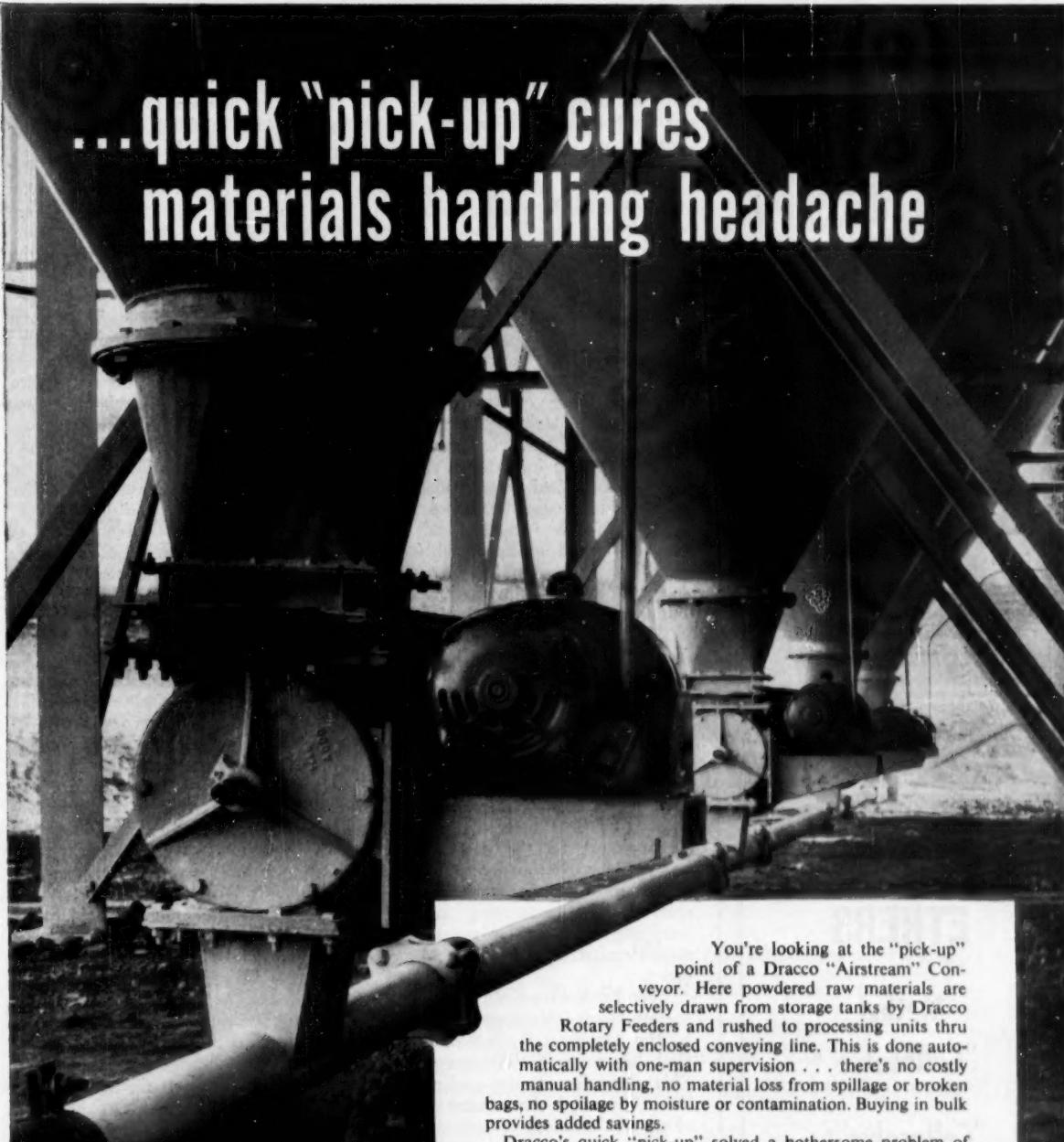
A pyramid of committees, the AATCC research organization is crowned by an executive group that receives its authority directly

from the association's governing council. The executive committee sets up research policy, authorizes research projects, designates supervisory staff, approves new test procedures and designates AATCC representation in cooperative ventures with other organizations. In these tasks it is aided by a technical committee, which receives research committee reports, reviews proposed test methods and generally counsels on technical matters.

Thirty two active research committees made up of 430 volunteers are charged with the actual work of developing new test methods. A director of research serves on the executive committee, is responsible for the operations of the laboratory and the work of the technical committee, research committees and research associates.

Financial support for AATCC's research comes chiefly from the association's corporate members (there are more than 300, including such dissimilar firms as Du Pont, Sears & Roebuck, and Burlington Mills). All are assessed annually (minimum: \$25)—which goes toward the support of fellowships and the operation of association-owned facilities at the Lowell Technological Institute.

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RESEARCH

tions in their approach to research. For one thing, they may sponsor basic or applied research, or both. Funds for this work may come from one, a few, or all association members; and in some cases, nonmembers may help finance a trade association research project. For a look at how one trade association, the American Assn. of Textile Chemists and Colorists, successfully organizes its research function (see box on page 74).

While trade association research differs in extent and organization, it does have a common aim: bolstering the competitive position of the industry it serves. And in every case, the key to success is in selecting a project of broad-gauge importance that cannot be researched better and cheaper by individual members. The American Assn. of Textile Chemists and Colorists, convinced of the need for improved quality control in its industry, is stressing development of rapid, accurate textile testing methods.

American Petroleum Institute (New York) stresses functional research: where to find oil, how to get it out of the ground, and isolating and identifying its chemical constituents. Newest API project (No. 52) started this week, is concerned with nitrogen constituents of petroleum. Project No. 6, in progress (first at Bureau of Standards, now at Carnegie Institute of Technology) for the past 27 years, has as its goals the determination of the composition of petroleum, development of fractionating processes, purifying hydrocarbon samples, and measurement of their physical properties.

Even further removed from production problems is the type of work done by the American Bottlers of Carbonated Beverages (Washington, D.C.). This group has studies under way at Yale University's department of physiology on the effect of carbon dioxide on the human system, is also researching the correlation (if any) between beverage sugars and tooth decay. Another service American Bottlers provides its members: a mobile technical service laboratory.

Serving the entire chemical industry is the Manufacturing Chemists' Assn. (Washington, D.C.), which expects to move in on the problem of codifying the physical properties of chemical compounds—in fiscal 1954-55. MCA is also sponsoring an independently financed research project at the Massachusetts Institute of Technology to study plastics measurement techniques. And still vitally concerned with stream pollution, MCA has just renewed for the second year its con-

tract with the Philadelphia Academy of Natural Sciences to study pollution-measuring methods. Cost of this project is about \$15,000/year.

Here's how some other leading chemical trade associations are serving their members and their industries:

- American Spice Trade Assn. (New York) sponsors research at the Hormel Institute at the University of Minnesota, also at other universities and industrial labs. Sample studies: anti-oxidants from natural spices (CW, June 19, p. 78); medical aspects of spices (now in progress at Harvard University's medical school). One such project in 1951 proved that spices could be safely included in low-sodium diets. An industrial fellowship at USDA's agricultural research service has been set up for the development of improved analytical methods of evaluating quality in spices. Although exact figures are confidential, an educated trade guess is that this organization is spending up to \$80,000/year to fend off potential competition from synthetic spices.

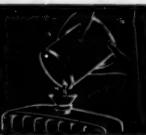
- National Paint, Varnish & Lacquer Assn., Inc. (Washington, D.C.) spends about \$100,000/year on developing better methods of testing paints. It is currently looking for better ways to test water-vapor transmission of paints and the effectiveness of fire-retardant paints. In line for future study: odor measurement. The association is limited to paint companies, has its own lab and a staff of 10, works closely with the American Society for Testing Materials.

- Portland Cement Assn., in order to extend uses and increase public confidence in portland cement, is pushing product development, technical service, and promotion. Its new labs outside Chicago cost \$3 million, guide one study (on the weather resistance of cement), with a 2000 A.D. deadline. The association has 67 members, which operate 141 plants and make 90% of the portland cement used in the U.S. and Canada. It's supported by voluntary contributions based on volume of business (i.e., barrels of cement), reportedly saves member firms a good deal of money by preventing duplication of research efforts.

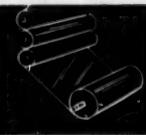
- The Society of the Plastics Industry, Inc. (New York), with over 800 company and 1,200 individual members, has no labs of its own but does sponsor, administrate, and coordinate some large projects. Example: a project to determine the performance characteristics of plastic pipe in the transmission of water in rural supply systems. This has been in progress at Michigan University's National San-

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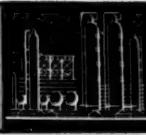
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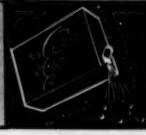
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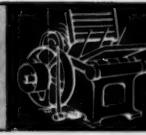
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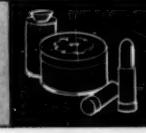
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RESEARCH . . .

tation Foundation since Jan. '52, was prompted by the reluctance of certain state public health authorities to approve plastic pipe for water transmission until authoritative statements could be made re advantages and toxicological characteristics. The 23 SPI members participating in this project range alphabetically from American Hard Rubber Co. (New York) to Yardley Plastics Co. (Columbus).

- Tanners Council of America (New York) spends between \$100,000 and \$200,000/year on basic and applied research on tanning procedures. It is one of the few with laboratory facilities (at the University of Cincinnati), also contracts with outsiders (e.g., Quartermaster Corps) for leather research.

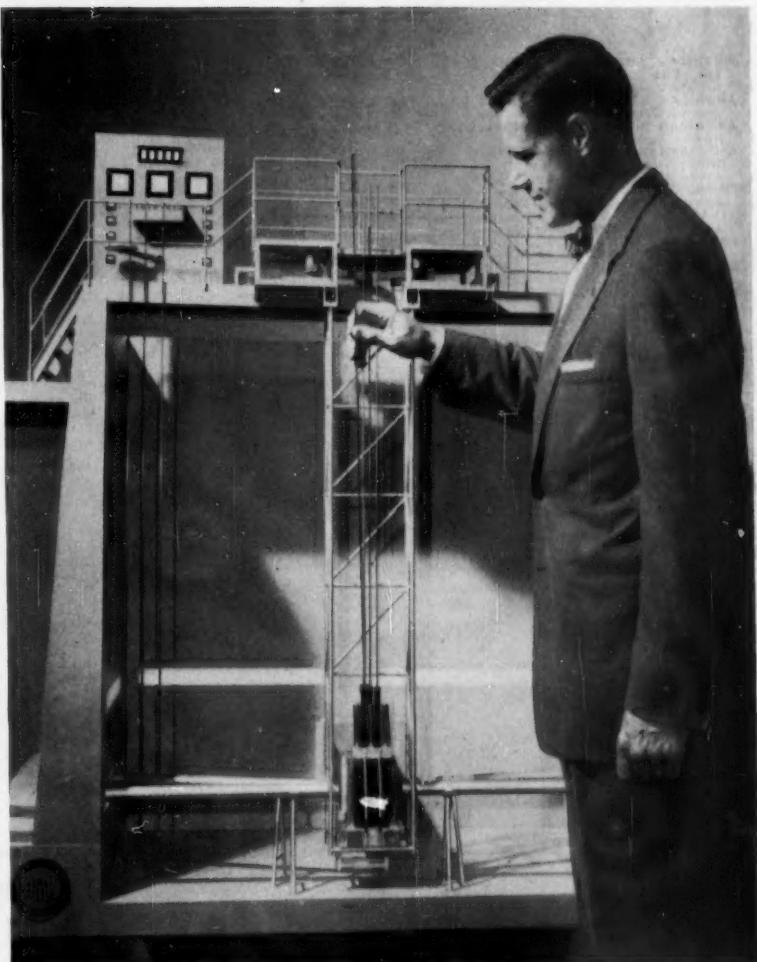
- American Oil Chemists' Society (Chicago) uses a rather novel approach to research. Individual members make their investigations on their employer's time, using his equipment and money. Whatever the employer wants kept secret is not divulged.

Each of AOCS's 150 member corporations pays \$15/year, but this covers only office expenses. Its research is pursued by 11 major committees, 26 subcommittees (each having 5 to 50 men).

No figure is available on the dollar value of AOCS research, but based on numbers of members, committees, and society papers that are published, it would appear that about \$500,000 worth of fats and oils research is done by AOCS members each year.

One of the headaches trade associations share is the need for greater financial backing. AATCC President Robert Bonnar says his association's research revenues are lagging costs, calls for more firms engaged directly or indirectly in textile dyeing, finishing, and printing to join in AATCC's research efforts. But despite the cry for more support, a look at some burgeoning research budgets shows the upward trend. AATCC spent \$45,500 for research in 1950-51, expects to spend \$72,000 in 1955-56. In the same period, API shows a comparable increase from \$440,000 to a projected \$730,000. It's pretty much the same story in other groups.

And the consensus of a dozen interested industry and government authorities checked by CW is that trade association research will continue to grow. Although few groups should find it necessary to establish their own labs, they are almost certain to boost their efforts as sponsors and promoters of technological activity.



AMF'S PETERSON: For startled eyes, a midget reactor.

Coming: MailOrder Reactors

Before the startled eyes of more than 1,000 visitors to last fortnight's "Atoms for Peace" exposition* at the University of Michigan, American Machine & Foundry Co. (New York) pulled an atomic reactor from its bag of tricks.

Only a model, the midget reactor is the first tangible result of AMF's forward-looking plans for getting into the industrial nuclear research picture. Engineered on the theme of unitization, the new research reactor can be put together to suit the requirements of its owner.

This idea, already used to advantage in many of the company's proprietary products, was quickly grasped by the engineers charged with study-

ing the feasibility of designing, building and operating a commercial research reactor.

The actual reactor, about six times the size of the model being demonstrated by AMF's Vice-President Arthur Peterson (above), is composed of a number of standardized components, each of which performs a separate function. This 'building block' principle, states AMF, imparts flexibility in assembling, cuts costs, guarantees reliability and makes for easy adaptation to new research techniques.

If the company's hopes materialize it will soon be able to quote costs on research reactors for a spate of Atomic Energy Commission-approved private projects. Its ultimate hope is to sell reactor components from a catalog.

* Sponsored by the nuclear engineering division of the American Institute of Chemical Engineers in conjunction with the International Congress on Nuclear Engineering.

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RESEARCH . . .



SHULTON'S JOFFRE: He found a shortcut to molecular rearrangement.

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Chemical Week • July 10, 1954

UV Route to Rhodinol

Ultraviolet light means less costly rhodinol to fine chemicals producer Shulton, Inc. (Clifton, N.J.). The radiation is the key to a new method of isomerizing citronellol (at \$2/lb.), to a true rhodinol, which is pegged at half the price of plant-derived rhodinol (\$25-30/lb.).

Newly patented (U. S. Pat. 2,679,476), the process is the work of Shulton's Steve Joffre. It isn't the only process of making rhodinol from citronellol—well known is one requiring treatment with acetic anhydride, halogenating and dehalogenating—but it's said to be simpler, give higher yields than predecessors.

Previous syntheses couldn't take the play away from the natural product derived from Geranium Bourbon (Reunion geranium oil).

Joffre's process can be either batch or continuous. In the former, citronellol in an open container is exposed to ultraviolet light from commercial uv-lamps; by circulating the oil through quartz coils, the process becomes continuous.

Promoters or catalysts—mercuric oxide, vanadium pentoxide, etc.—can be used, but they aren't essential. With or without them, the rearrangement takes place at room temperature. Depending on exposure times (12-24 hours) and temperatures, 65-80% yields can be obtained.

The new process fits into Shulton's planned objective of developing domestic sources of perfume and flavoring chemicals. Earlier efforts along this line were focused on propenyl guaethol (a concentrated vanilla flavoring) and heliotropin.

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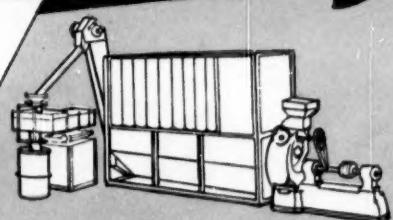
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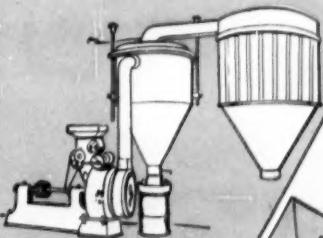


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